AIR DEFENSE ARTILLERY

THE JOURNAL OF AIR DEFENSE ARTILLERY • OCTOBER - DECEMBER 2006

Deployable Homeland Anti-Cruise Missile Defense

1-44 ADA Soldiers Provide Proof of Concept

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- Intercept Point: U.S. Stations Patriot Battalion in Japan
- Missile Defense System Goes Operational as North Korea Goes Ballistic
- Training for Air & Missile Defense Operations on the Asymmetric Battlefield
- The Looming Force Protection Crisis for Brigade Combat Teams
- Employing the Air Defense Airspace Management Cell

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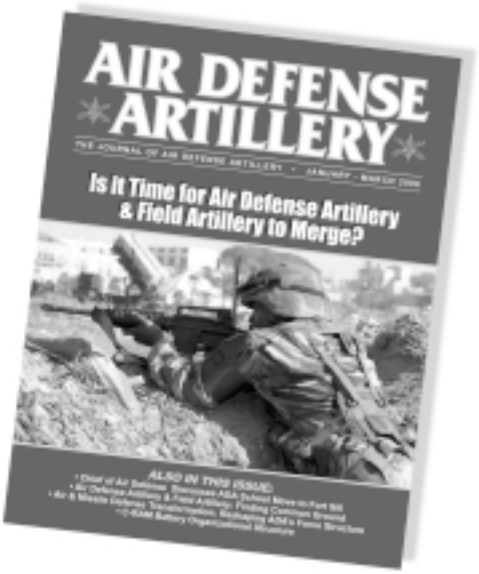
ADA Magazine Ceases Publication



In 2007, the Fires Center of Excellence, now taking shape at Fort Sill, Oklahoma, will publish the first issue of a new combined professional journal that will replace both *Air Defense Artillery* and *Field Artillery* magazines. Although all the details have yet to be worked out, *Air Defense Artillery* magazine will cease publication effective with this issue, and its staff will begin working with the staff of *Field Artillery* magazine to launch the new magazine.

The Fires Center of Excellence magazine will provide coverage of both Air Defense Artillery and Field Artillery developments. Instructions for submitting articles to the new Fires Center of Excellence magazine will be published on Air Defense Artillery websites and transmitted by e-mail to Air Defense Artillery units and offices in coming months.

The U.S. Army Training and Doctrine Command has also directed other branch service schools that are collocating to form centers of excellence—including Armor and Infantry—to merge their branch journals into one. This directive encourages "jointness," reduces publishing costs, and provides an attractive format for future articles. The directive, which shatters long traditions and severs emotional attachments, also indicates how seriously senior Army leaders regard Army transformation.

This new magazine will not impact the popular ADA Online and ADA Today websites, which post original articles and feature daily updated links to air and missile defense articles posted on news media websites. The ADA Online staff also maintains ADA in Action, a website that features book-length historical narratives. Soldiers, federal civilian employees, and public affairs officers should continue to submit articles to ADA Online.

Air Defense Artillery magazine traces its lineage back to the *Journal of the United States Artillery*, which was first published in 1892. As the *Antiaircraft Artillery Journal*, it chronicled the heroic achievements of antiaircraft units during World War II and the Korean War. For more than a century it has provided a forum to debate air and missile defense doctrine, tactics, techniques, and procedures; promote Air Defense Artillery programs and initiatives; proclaim Air Defense Artillery battlefield successes; and publicize the heroism of "First to Fire" Soldiers. The publication of the new Fires Center of Excellence magazine offers the Air Defense Artillery branch an opportunity to continue that tradition.

ADA MAGAZINE

The Journal of Air Defense Artillery

OCTOBER - DECEMBER • 2006

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ON THE COVER: *An Avenger crew member scans for cruise missiles during NORAD's Deployable Homeland Anti-Cruise Missile Defense Proof of Concept Operation.* (Photo by Captain James B. Brindle)

INTERCEPT POINT

United States Stations Patriot Battalion in Japan

1-1 ADA Moves to Kadena Air Base

by Major General Robert P. Lennox

In August 2006, the 1st Battalion, 1st Air Defense Artillery (ADA), began relocating from Fort Bliss, Texas, to Kadena Air Base on the southern Japanese island of Okinawa. According to a U.S. Forces Japan press release, stationing the battalion, which is equipped with the latest Patriot Advanced Capabilities-3 (PAC-3) missiles, at Kadena enhances the security of Japan by providing a reliable tactical ballistic missile defense asset to serve as a deterrent in the region.

A federal civilian employee helps ADA Soldiers load equipment onto railcars at Fort Bliss, Texas, for shipment to Kadena Air Base, Okinawa.

News media reports misinterpreted the decision to station a U.S. Patriot battalion in Japan, which was announced in July 2006, as a reaction to a recent series of North Korean ballistic missile launches that heightened tensions in the region. However, Washington and Tokyo had agreed in principle to the introduction of a U.S. Patriot unit to Japan long before the North Korean missile tests of July 2006 made international headlines. So, the decision to deploy PAC-3 capabilities to Japan is not in response to new or specific threats, but the result of almost two years of planning to advance bilateral ballistic missile defense capabilities.

The 1-1 ADA relocation is one of several steps the United States and Japan are taking to ensure adequate missile defenses are in place. Other examples include the stationing of an X-Band radar in northern Japan, the deployment of an Aegis ballistic missile defense cruiser to Yokosuka (the entrance to Tokyo Bay), the collocation and integration of air defense command and control capabilities, and the establishment of a bilateral joint operation coordination center at Yokota Air Base in the suburbs of Tokyo. Japan and the United States have also agreed to jointly develop a new standard missile interceptor, the SM-3 Block 2A.

The U.S.-Japan bilateral ballistic missile defense efforts in the Asia-Pacific region are mirrored by similar initiatives around the world. In Europe, for example, Germany, Italy, and the United States are jointly developing the Medium Extended Air Defense System, the eventual replacement for Patriot. The North Atlantic Treaty Organization (NATO) has committed financial resources and, by 2010, expects to be able to protect deployed forces against short- and medium-range ballistic missiles. NATO is also studying options to protect its territory and population centers against the full spectrum of ballistic missile attacks. Ballistic missile defense is going global to match the global ballistic missile threats.

At Fort Bliss, 1-1 ADA was part of the 31st ADA

Brigade, III Corps, Fort Hood, Texas. On 16 August 2006, 1-1 ADA transferred from 31st ADA Brigade authority to the 94th Army Air and Missile Defense Command at Fort Shafter, Hawaii. Day-to-day administrative actions and support activities are completed through the 10th Area Support Group located on Torii Station, Okinawa.

1-1 ADA's relocation will occur in four phases. Phase one was the preparatory work required for Kadena Air Base to accept the battalion. Phase two, currently underway, is the movement of 1-1 ADA from Fort Bliss. Phase three is the validation of 1-1 ADA from initial operational capability through full operational capability. Phase four is the continuation of work on improving existing support and training facilities.

The Patriot battalion will use existing space and newly renovated older facilities at Kadena Air Base, requiring no expansion of the base itself. Housing is available in the Kadena area for all 1-1 ADA Soldiers and family members. Soldiers and their families will reside in the civilian community or in one of four military housing areas: Camp Kinser, Camp Foster, Camp Lester, and Kadena Air Base.

According to articles published in the *Pacific Stars & Stripes*, the announcement that a Patriot battalion would be moving to Okinawa triggered protests by residents, labor unions, and peace activists. Lieutenant Colonel Matt Michaelson, the 1-1 ADA commander, said the battalion's Soldiers will work to build a positive rapport with the civilian populace while striving to achieve operational capability.

"Our deployment will increase the number of U.S. service members on Okinawa by approximately six hundred Soldiers," said Lieutenant Colonel Michaelson. "But the increase is only temporary—U.S. Marine units are scheduled to move from Okinawa to Guam—and we are making the move slowly over a four-month period to minimize the impact of newly arriving personnel. As the Marines move off the island, our battalion will become an increasingly important contributor to the local economy.

A 1st Battalion, 1st Air Defense Artillery, Soldier secures equipment onto a railcar in the Fort Bliss, Texas, marshalling yards.

Moving the 1st Battalion, 1st Air Defense Artillery, to Okinawa will introduce Patriot Advanced Capabilities-3 firepower to the Asia-Pacific region.

"We are here to protect the people of Okinawa..."

"All Soldiers and leaders of the 'Snake Eyes' battalion are greatly looking forward to joint partnerships with the Air Force, Navy, and Marine Corps as well as supporting the historic and proud Okinawan people," he continued. "The Patriot system is a purely defensive weapon system. We are here to protect the people of Okinawa, and we are taking every precaution to safeguard the environment. The Patriot launchers have a proven safety record, and the Patriot radars have a narrow focus aimed toward the ocean rather than populated areas.

"The Soldiers of 1-1 ADA are extremely proud to be responsible for this challenging and exciting mission," Lieutenant Colonel Michaelson added. "We look forward to doing everything in our power to represent the United States Army, the ADA branch, and the 94th Army Air and Missile Defense Command to the best of our abilities while on Okinawa. We are committed to being the best trained, best resourced, and most spirited unit across the region. We will be the 'First Line of Defense' in support of the U.S. Army Pacific commander's priorities."

Robert P. Lennox

Robert P. Lennox
MG, USA
Commanding

The deployment of the 1st Battalion, 1st Air Defense Artillery, to Kadena Air Base marks the return of Air Defense Artillery to Okinawa. *The Coral Courier*, a weekly newspaper published by the U.S. Army Base Command, published the following article on 1 June 1973 to announce the inactivation of the 30th Air Defense Artillery Brigade.

30th ADA Brigade Relinquishes Role to Japanese Self-Defense Force

The 30th Air Defense Artillery Brigade, located on Okinawa, will cease operations and be placed on inactive status this month. The brigade, which presently is composed of two battalions; the 8th Battalion, 1st Air Defense Artillery (Hawk); and the 8th Battalion, 3rd Air Defense Artillery (Nike Hercules). The Headquarters Battery, and the 44th Ordnance Company (Guided Missile) (General Support) is being phased out as a result of the reversion of the Ryukyu Islands from United States control to the control of the Japanese government, which took place last year.

The 30th Air Defense Artillery Brigade has roots dating from World War I, specifically with the formation of the First Expeditionary Brigade, Coast Artillery Corps, Regular Army, at Fort Adams, Rhode Island, July 24, 1917.

Originally, it was known as the First Separate Brigade, Coast Artillery Corps, receiving its numerical designation as the 30th Artillery Brigade (Coast Artillery Corps-Railway), March 25, 1918. In that year the brigade took its heavy railway guns to France where it earned campaign streamers for the Saint-Mihiel and Meuse-Argonne offensives.

After the war the brigade returned from Europe and was inactivated at Camp Eustis, Virginia, in August 1921. Save for a four-year period (1926-1930), the 30th Artillery Brigade did not reappear on the rolls of the active Army until 1960.

In 1949 the Army activated the 97th Anti-Aircraft Artillery (AAA) Group composed of elements of the 61st and the 65th Artilleries on Okinawa. Armed with 78mm Skysweepers and 120mm and 90mm guns, the units of the 97th AAA served through a trouble-ridden decade that saw the Korean War, the Indo-China War, and successive crises. In 1959 the Army's 97th Group converted to the highly capable Nike-Hercules air defense missiles and on June 24, 1960 was redesignated the 30th Artillery Brigade (Air Defense).

As then constituted, the brigade was formed in part from the former subordinate units of the inactivated 97th, to include the brigade headquarters, the 2nd Missile Battalion, 61st Artillery, and the 1st Missile Battalion, 65th Artillery.

In 1961 the 30th Brigade was brought to four-battalion strength with the arrival of battalions of the 1st and 3rd Artilleries armed with the deadly Hawk air defense missile to provide protection against low-altitude aircraft. On June 6, 1961 the 30th Artillery Brigade (AD) became the first Allied unit to fire a Nike-Hercules missile outside CONUS.

The year 1968 saw the 44th Ordnance Company (Guided Missile) (General Support) (Direct Support) formed from four direct-support platoons and two engineer detachments attached to the missile battalions.

The 30th Artillery Brigade (AD) emerged as a mission-oriented Army team of more than one arm or branch, for it included its own supporting Engineer, Ordnance, and Signal elements. In turn, the air defense elements of the brigade, working under the operational control of the 313th Air Division, worked closely with the U.S. Air Force as part of a highly effective multi-service air defense team, protecting Okinawa from possible hostile air attack.

In October of 1969 the brigade was reorganized with the four battalions being reduced in strength and combined into two: one Hawk (8th Battalion, 1st Artillery) and one Nike-Hercules (8th Battalion, 3rd Artillery). The battalions of the 61st and the 65th Artillery were returned to inactive status.

On September 14, 1971, both the 1st and 3rd Artilleries were redesignated as Air Defense Artillery, as a result of the realignment of the Army Artillery Regiments, and on March 13, 1972, the brigade was redesignated from the 30th Artillery Brigade (Air Defense) to the 30th Air Defense Artillery Brigade.

On November 21, 1969, in a joint communiqué, U.S. President Richard M. Nixon and Japanese Prime Minister Eisaku Sato announced that the Government of Japan and the Government of the United States of America should enter immediately into negotiations for the reversion of the Ryukyu Islands to Japan. After extensive planning, the reversion of the Ryukyu Islands took place on March 15, 1972, terminating over 25 years of United States administration.

Included in the reversion agreements was an arrangement that Japan would assume the responsibility for the air, ground, and maritime defense of the Islands not later than July 1, 1973. The Government of Japan agreed to deploy a Nike group (three batteries), a Hawk group (four batteries), and appropriate supporting troops to Okinawa to carry on the surface-to-air missile role in the air defense mission. Additionally the Government of Japan agreed to buy the U.S. equipment presently located on site.

A Surface-to-Air Missile Transfer Plan was jointly prepared by U.S. Army, Japan Air Self-Defense Force (JASDF) and Japan Ground Self-Defense Force (JGSDF) planners. The Nike missile systems were transferred to the JASDF and the Hawk missile system to the JGSDF.

In accordance with the transfer plan, on-site orientation and familiarization took place on Nike sites, with 30th Air Defense Artillery Brigade and JASDF advance party personnel working and living together on site. Brigade personnel manned the sites until the transfer was complete.

When all facets of the transfer are complete, one of the significant phases of Okinawa reversion will be finalized. The brigade is proud to have been a part of such an historic event.

By the end of this month, the 30th Air Defense Artillery Brigade will officially cease to exist as an active unit. Throughout its tenure on Okinawa the brigade exemplified the highest spirit and tradition of the Air Defense Artillery. It is this spirit and tradition that saw the brigade through 13 years of unceasing, 24-hour-a-day vigilance in the Ryukyus. Their performance is best described by the brigade's motto: "Always On Target."

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STRIPES

by Command Sergeant Major Robert S. Rodgers

Some noncommissioned officers (NCOs) are born leaders, but most of us have to work at it. We start by studying and adapting the leadership styles and techniques employed by NCOs we admire. We learn from our mistakes. Gradually, we acquire an image, or vision, of what an NCO should be, and we strive to remake ourselves in that image. If we work hard enough—if we care about Soldiers and accomplishing the mission—the vision becomes reality. As the new command sergeant major of the U.S. Army Air Defense Artillery Center, I want to tell you how you can transform your vision of what an Air Defense Artillery NCO should be into your personal reality.

Training

The basic building block of our Army's combat power has been—and always will be—the NCO. The training of individual Soldiers to become skilled members of a combat team falls to the NCO. The NCOs accomplish this by teaching recruits, from an amazing diversity of backgrounds, commitment to each other and to shared goals and missions.

Good NCOs must constantly study to master their craft. Conduct rigorous training, using the latest tactics, techniques, and procedures under challenging conditions, to ensure your Soldiers maintain combat readiness. Keep in mind that the characteristics of every combat team are different and dependent upon the traits of individual team members. Seek to provide Soldiers an environment that fosters mutual respect and builds cohesive teams in which each Soldier's unique strengths are valued and put to use and individual weaknesses are irrelevant. Never forget that the greatest contribution you can make to Soldiers' welfare is to train them better than any adversary they may face in combat. This will ensure they win decisively and return home safely to their friends and families. The more Soldiers sweat in training, the less they will bleed in combat.

Discipline and Standards

Our Army's success on the battlefield and in garrison depends on discipline and strict adherence to established standards. Discipline is what sets Soldiers apart from the general populace and enables our units to accomplish their arduous missions during the extreme hardship and chaos of combat. It requires each of us to do the right thing at all times, to take appropriate actions in the absence of orders, and to never "pass a wrong" without taking corrective action. When assigning missions, make sure Soldiers know and understand the standards. Follow up by ensuring they complete all assigned and implied tasks to standard. Soldiers who do not know or do not comply with standards, coupled with leaders who fail to teach or enforce standards, are the root cause of mission failures.

Communications

NCO who are effective communicators deliver clear messages that Soldiers cannot fail to understand; however, communications is a two-way street. Effective communicators actively listen to Soldiers and respond in ways that demonstrate interest, understanding, and concern. Consistently communicate with Soldiers and counsel them on a routine basis, guiding and encouraging them to make sound decisions regarding their personal lives and careers. Most importantly, know your limitations and never advise your Soldiers on matters in which you are not an expert; refer them to trained professionals who can best assist them.

Trust and Respect

Trust and respect are interdependent bonds between leaders and Soldiers. Lose the trust of Soldiers, you also will lose their respect. The impact on unit morale and combat readiness can be devastating. As a leader you cannot expect your rank alone to automatically command the trust and respect of Soldiers—that's intimidation, not leadership. You have to earn the trust and respect of Soldiers the old-fashioned way—by demostrating mutual trust and respect to Soldiers in your charge. Your stripes are not as much a symbol of authority as they are a symbol of servitude to the Soldiers who look to you for guidance and leadership. You cannot rob a Soldier of self-esteem and then expect that Soldier to perform with dignity, poise, and pride on the battlefield. Make your word your bond and treat all Soldiers with dignity and respect.

Time Management

One thing Soldiers absolutely hate is mismanagement of time. Leaders who do not assign tasks due during duty hours, yet always come up with tasks that "have to be done before you go home tonight" at day's end are not employing good time-management techniques. Always set clear, well-defined goals. At the beginning of each duty day, let your Soldiers know which goals or set of tasks are due before they are released from duty. Keep Soldiers informed of upcoming events, conduct periodic reviews of the unit's training schedules, and advise Soldiers of schedule changes. After verbally going over the training schedule, post a copy in the immediate work area for your Soldiers' future reference. When planning future events, use the "one-third/two-thirds" rule. Devote one-third of the time available to planning and obtaining resources while allotting two-thirds of the time available for Soldiers to prepare, rehearse, refine, and execute.

One Minute Manager

Soldiers' number one motivator is feedback. Take one minute a day to talk to Soldiers, concentrating on setting clear goals, praising good performance, and reprimanding or redirecting poor performance. Praise in public and punish in private. To produce results, your feedback must be immediate and specific. Praise that focuses on reinforcing productive, goal-achieving behavior is a leader's most effective tool. State your feelings clearly and do not wait for "perfect" before praising; remember, "close counts."

Command Team Relationships

Perhaps the single most important influence in the professional development of newly commissioned second lieutenants is their first platoon sergeant. Just as all enlisted Soldiers remember their drill sergeant, all officers recall their first platoon sergeant, and most can recall their relationship in vivid detail. The platoon leader/platoon sergeant relationship is replicated at higher echelons where it becomes a battery commander/first sergeant or battalion commander/command sergeant major relationship. The command team relationship between officers and NCOs shapes leadership styles and determines command climates, setting the stage for success or failure. Hence, it is absolutely inherent upon us as NCOs to give our officers our full measure of support, providing them with the wealth of experience embedded in the NCO Corps.

Accepting the Challenge

Some NCOs may experience the type of career-defining moment you see in Hollywood movies—an experience that instantly transforms them into inspirational leaders—but most of us have to work on it daily. The first step is to believe. By this I mean that you have to believe that an effective leadership style is not something you have to be born with, but is something that you can develop. I challenge each of you to make your vision of what an NCO should be your personal reality.

First to Fire!

Robert S. Rodgers

Robert S. Rodgers
CSM, USA

SCANNING

PAC-3 Missile Successfully Destroys Tactical Ballistic Missile in Test

A Patriot Advanced Capabilities-3 (PAC-3) missile successfully intercepted and destroyed an incoming tactical ballistic missile target 1 September 2006 during a flight test at White Sands Missile Range, New Mexico. This was the nineteenth successful flight test out of twenty-two conducted to date.

During the flight test, two PAC-3 missiles were "ripple-fired" at an incoming Patriot-As-A-Target, a legacy Patriot missile modified to represent a tactical ballistic missile. Preliminary data indicated the target was destroyed, and all test objectives were achieved. Objectives of the test included demonstrating software improvements in both the PAC-3 missile segment and software enhancements of the associated ground system. Additionally, the test demonstrated the system's capability to detect, track, engage, and intercept a threat-representative short-range tactical ballistic missile target. The September 2006 flight test repeated the November 2005 mission to address remaining test objectives that were not fully met during that test.

The PAC-3 missile has been the technology pathfinder for today's total conversion to kinetic energy interceptors for all modern missile defense systems. Currently, the Lockheed Martin-developed Aegis Weapon System, PAC-3 missile, the Terminal High-Altitude Area Defense system, the Medium Extended Air Defense System, and the Ground-Based Missile Defense Multiple Kill Vehicle use this proven advanced technology.

Lockheed Martin Missiles and Fire Control is prime contractor on the PAC-3 missile segment upgrade to the Patriot air defense system. The PAC-3 missile segment upgrade consists of the PAC-3 missile, a highly agile hit-to-kill interceptor, the PAC-3 missile canisters (in four packs), a fire solution computer, and an Enhanced Launcher Electronics System.

The Looming Force Protection Crisis for Brigade Combat Teams

by Lieutenant General (Ret.) James C. Riley and Brigadier General (Ret.) Michael Means

The U.S. Army's current and future forces must be prepared to counter asymmetric weapons such as long-range ballistic missiles, cruise missiles, rotary-wing aircraft, and unmanned aerial vehicles (UAVs). Furthermore, rocket and mortar attacks are frequent occurrences at forward operating bases in Iraq and Afghanistan. The air and missile defense (AMD) community is working to field capabilities to counter these threats. Until these new AMD capabilities are fielded, the centerpiece tactical formation of Army transformation—the brigade combat team (BCT)—will rely on small arms to defend itself against these types of asymmetric threats.

The Army's brigade combat teams rely on small arms to defend themselves against cruise missiles, unmanned aerial vehicles, and rotary-wing aircraft.

The asymmetric weapons described above are currently capable of transmitting accurate reconnaissance, surveillance, and target acquisition information, and they will certainly evolve in the future to have significant onboard strike capabilities. Despite the tremendous success of U.S. forces in employing tactical UAVs in Operations Iraqi Freedom and Enduring Freedom and the rapid evolution of threat UAV capabilities, the Army has yet to initiate the development of effective, affordable solutions to counter this threat.

This article is intended to stimulate increased dialogue and focus on the BCT force protection problem. Although the rotary-wing threat is significant, this article specifically addresses the UAV threat facing the modular BCT.

The UAV Threat

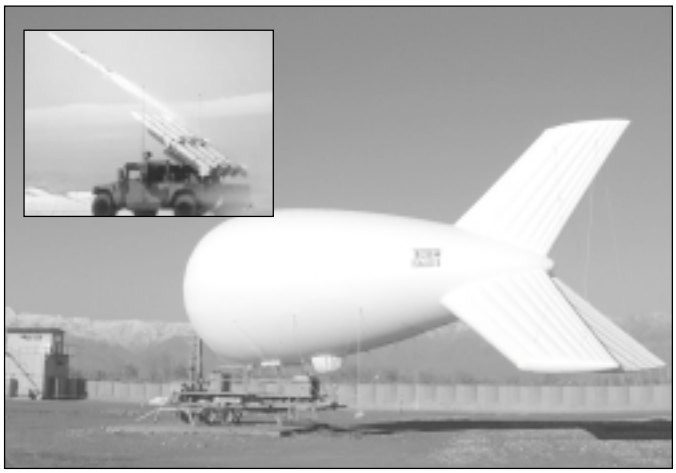
The UAV threat era is already here. Open-source reports state that eighteen countries develop or manufacture UAVs, and that at least twice that number of countries operate UAVs. American forces have experienced significant success in Iraq and Afghanistan with higher altitude UAVs such as Global Hawk and Predator. At the tactical level, U.S. forces have experienced similar success with smaller UAVs, such as Shadow 200 and Raven, to significantly expand their situational awareness. As a result, demands for UAVs are increasing. It will not be long before our adaptive adversaries recognize the operational and economic value of these small UAVs and begin using them to their advantage against U.S. combat formations. Our potential adversaries can acquire tactical UAV capabilities with relative ease. This does not require sophisticated engineering skills and production facilities or extensive operator training programs such as those required by manned aircraft programs. Threat tactical UAVs will have the capabilities to stay aloft for hours at a time, operate at low altitudes, and transmit data over extended distances to ground control stations.

The key components of a UAV include: an airframe platform (either fixed- or rotary-wing); a navigation control system; a payload such as a sensor, video camera, weapon, or warhead; a communications relay to transmit data, video, or imagery; and a ground control station. The larger tactical-level systems such as the Iranian Ababil also require equipment or infrastructure to launch and recover the UAV. On the other hand, mini-UAVs are small enough to be carried by one person and can be hand-launched from anywhere on the battlefield. They are cheap to assemble and can provide a "good enough" capability due to smaller, more advanced components that are increasingly available in the commercial marketplace or on the Internet. The airframe can be a model airplane and the control station can be a laptop with the right software. Operating and employing small UAVs in today's tactical environments is simply not a significant challenge for our potential adversaries today.

As a point of reference, Soldiers have routinely employed the small U.S. Raven UAV in a wide variety of tactical environments. The Raven incorporates the UAV characteristics identified in the paragraphs above, weighs less than five pounds, and costs approximately $25,000. A poor man's UAV that is "good enough" to provide intelligence on BCT operations and locations is available at half that cost. Because these UAVs are relatively inexpensive, even a moderately financed adversary could procure a number of tactical UAVs to employ against deployed U.S. forces.

Background

The U.S. Army has consolidated its AMD capabilities in theater-level composite AMD brigades. The U.S. Army Training and Doctrine Command Capability Gap Analyses and the AMD Operational and Organizational Plan for Future Forces acknowledge that this AMD realignment



The Army is counting on future air and missile defense systems, including the Joint Land Attack Cruise Missile Defense Elevated Netted Sensor, above, and Surface-Launched Advanced Medium-Range Air-to-Air Missile system, inset, to protect brigade combat teams.

Perhaps what is most interesting about the Israeli-Hezbollah conflict is the lack of excitement about the use of unmanned aerial vehicles. This conflict was the first to have both sides make use of offensive unmanned aerial vehicles and unmanned combat aerial vehicles.—"A Military Assessment of the Lebanon Conflict" by Ben Moores, *Winds of Change*, 24 August 2006

Israel's surveillance radars could not detect Iranian UAVs [unmanned aerial vehicles]. The Israeli Defense Force was forced to rush experiments to find one that could detect such a small, low-flying platform. (This may have been an artillery counter-battery radar, but Israeli sources would not confirm this.)—*Preliminary Lessons of the Israeli-Hezbollah War* (Working Draft for Outside Comment), Center for Strategic and International Studies, 17 August 2006

increases the risk of exposing current and future U.S. forces to aerial reconnaissance, surveillance, and target acquisition systems. Planned risk mitigation approaches rely on reach-back capabilities, including future systems such as the Medium Extended Air Defense System (MEADS), Joint Land Attack Cruise Missile Defense Elevated Netted Sensor (JLENS), Surface-Launched Advanced Medium-Range Air-to-Air Missile (SLAMRAAM), and Enhanced Area Air Defense System (EAADS) in the theater AMD brigade. Until these systems are fielded, the Army will employ a complementary mix of current systems, including Patriot and Avenger. Depending upon mission, enemy, troops, terrain-time and civilian (METT-TC) considerations, the AMD brigade commander will provide a task force of Patriot and Avenger systems in the near term and MEADS and SLAMRAAM in the 2015 time frame to counter AMD threats. However, these systems, which will be assigned to the theater-level AMD brigades, are designed to provide force protection against a broad array of AMD threats. The Army should consider developing capabilities specifically tailored to meet the UAV threat.

Operational Risks

The risks to the BCT from the employment of tactical UAVs by potential adversaries in the near future are significant and may not be fully appreciated by the Army for the reasons listed below.

Significant budget pressures stemming from support of the Global War on Terrorism, humanitarian relief efforts, and the high price of fuel, as well as other transformation priorities, will continue to slow acquisition timelines. These factors may even force the cancellation of important Army transformation plans, including AMD programs that are part of the planned risk mitigation effort for threat UAVs.

Reach-back for AMD capabilities consolidated in the theater-level AMD brigade may not always be available to the BCTs due to other, higher joint task force operational priorities or deployment timelines.

AMD systems must have the same mobility capabilities as the BCTs or the BCTs will quickly outrun coverage. Patriot, SLAMRAAM, and Avenger systems may not have the same level of mobility as the Stryker or heavy BCTs.

Threat UAVs are an Army problem. The U.S. Air Force is primarily focused on the threats operating in the higher altitude airspace. However, the Army is not focused on the low-altitude UAV threat either.

Recommendations

So what should be done? As with other complex threats, there is no single solution for the rapid proliferation of tactical UAVs. Several actions should be considered.

• Adapt current force-on-force models and simulations, including threat UAVs employed against stationary and mobile BCT formations. Quantify the effectiveness of UAVs to detect, identify, and target tactical formations and high-value assets. Fully evaluate the BCT's exposure to short-range UAVs and develop a complete understanding of potential losses attributable to UAVs.

• Employ UAVs as part of opposing force capabilities at the combat training centers to better understand operational impacts and identify capability gaps. Further develop tactics, techniques, and procedures to counter these threats.

• Explore techniques to jam the capability to relay transmission of data from threat UAVs to ground stations.

• Explore opportunities to return organic and optimized air defense capabilities back into the BCTs for self-protection, especially solutions that don't add additional force structure.

• Provide organic capabilities in the BCT to detect, identify, and track low-altitude UAV threats.

• Develop cost-effective capabilities to engage and destroy or neutralize threat UAVs at stand-off ranges.

Summary

As stated, the intention of this article is to stimulate discussion about the lack of protection for the BCT, the centerpiece formation of our reorganized and transforming Army. Currently planned AMD capabilities do not provide cost-effective solutions for defense against the UAV threat described in this article. As a result, BCTs are vulnerable to the UAV threat. Solutions to counter this very challenging threat won't come overnight, and it will be too late once our adversaries start using UAVs against U.S. forces. And they will! This is hard work that needs to be done. Ignoring the problem will not make this force protection crisis go away.

Lieutenant General (Ret.) James C. Riley is a vice president of the Land Combat product line at Raytheon Missile Systems, Tucson, Arizona. Prior to his retirement from military service, he commanded at all levels from company to corps. He served as the commanding general of V Corps in Germany and the Combined Arms Center at Fort Leavenworth, Kansas, and was deputy commander of the U.S. Army Training and Doctrine Command. During his distinguished Army career, he also commanded the 3rd Brigade Combat Team, 3rd Infantry Division (Mechanized) during Operations Desert Shield and Desert Storm and, later, the 3rd Infantry Division. Before joining Raytheon in January 2005, Lieutenant General Riley assisted the U.S. Army in developing conceptual solutions to challenges presented by asymmetric warfare. He serves as a member of the Army Science Board.

Brigadier General (Ret.) Michael Means is the manager of Land Warfare Force Protection Systems in the Land Combat product line at Raytheon Missile Systems, Tucson, Arizona. He retired from military service with more than thirty-one years of combined active and reserve component service. He completed the Air Defense Officer Basic and Advanced Courses, served in a Hawk battery in Korea, and commanded a Chaparral battery in the 3rd Battalion, 68th Air Defense Artillery, 3rd Infantry Division, in Germany. He completed the U.S. Army Command and General Staff College and the U.S. Army War College. In the U.S. Army Reserve, he commanded the 3rd Battalion, 310th Regiment, 3rd Brigade (Field Exercise), 78th Division, and later commanded the 3rd Brigade (Field Exercise). He also served as deputy commander of the 9th Theater Support Command.

SCANNING

Ground-Based Missile Defense Exercise and Flight Test Successfully Completed

The Missile Defense Agency announced 1 September 2006 that it had successfully completed an important exercise and flight test involving the launch of an improved Ground-Based Interceptor missile designed to protect the United States against a limited long-range ballistic missile attack. The flight test results will help to further improve and refine the performance of numerous Ground-Based Midcourse Defense elements that will be used to provide a defense against the type of long-range ballistic missile that could be used to attack an American city with a weapon of mass destruction.

The interceptor missile was launched from the Ronald W. Reagan Missile Defense Site, located at Vandenberg Air Force Base, California. A threat-representative target missile was launched from the Kodiak Launch Complex, Kodiak, Alaska.

The exercise was designed to evaluate the performance of several elements of the Ballistic Missile Defense System. Mission objectives included demonstrating the ability of the Upgraded Early Warning Radar at Beale Air Force Base, California, to acquire, track, and report the target warhead. The exercise also assessed the performance of the interceptor missile's rocket motor system and Exoatmospheric Kill Vehicle, which is the component that collides directly with a warhead in space to perform a "hit-to-kill" intercept using only the force of the collision to totally destroy the target warhead. Initial indications are that the rocket motor system and kill vehicle performed as designed. Program officials will evaluate system performance based upon telemetry and other data obtained during the test. Although not a primary objective for the data collection flight test, an intercept of the target warhead was achieved.

The test also successfully exercised a wide variety of components and subcomponents as part of the evaluation of system performance, including improved missile silo support equipment, booster/kill vehicle separation, kill vehicle sensor cooling, kill vehicle orientation and positioning, and several more elements.

The Ground-Based Midcourse Defense system currently has interceptor missiles deployed at Fort Greely, Alaska, and at Vandenberg Air Force Base. Other components of the Ground-Based Midcourse Defense include the upgraded Cobra Dane radar in the Aleutian Island chain of Alaska and the upgraded early warning radar at Beale Air Force Base. A forward deployed air-transportable X-Band radar is currently stationed in Japan, and several U.S. Navy Aegis-class cruisers and destroyers with the advanced SPY-1 radar have been modified for integration into the command, control, battle management, and communication element of the Ground-Based Interceptor system. The new Sea-Based X-Band radar mounted aboard a large seaborne platform will be integrated into the system later this year. During the September exercise, it was used to track the target missile as part of its radar calibration process.

Avenger crew members from the 5th Battalion, 5th Air Defense Artillery, showed cadets at Forward Operating Base Buckner some of the firepower Air Defense Artillery brings to the fight.

Preparing West Point Cadets for Combat

Air Defense Artillery's Role in West Point Cadet Summer Training

by Captain Frederick Orndorff

Chairman of the Joint Chiefs of Staff General Richard B. Myers told the U.S. Military Academy graduating class of 2005, "Nothing is routine anymore. You are pinning on your [lieutenant's] bars while our nation is at war."

Armies around the world have been guilty of preparing their forces for the last war—the one they know—rather than the next war. After 9/11, war as the United States knew it changed. This change from conventional warfare to asymmetric warfare produced corresponding changes in Army training priorities. The Army now perceives that platoon leaders and company commanders rather than higher-echelon commanders will drive future doctrine. In line with the Army's altered tactical mindset, West Point has radically changed the way it teaches cadets to fight our nations' wars.

The academy's Department of Military Instruction, which trains the Corps of Cadets in the essence of warfighting and the profession of arms, played a key role in changing the academy's training focus. The department aggressively recruited officers and noncommissioned officers who had successfully led troops in combat in Afghanistan and Iraq. As members of the faculty, these battle-hardened veterans are the dynamic force behind the sweeping changes in cadet military training.

Changes in the training focus have profoundly impacted summer military training for cadets. Summer military training is now based on lessons learned supplied by "troops on the ground" in Iraq and Afghanistan. The program incorporates these lessons learned into all training events, including weapons immersion, introduction to patrolling, advanced marksmanship training, convoy operations, improvised explosive device scenarios, and civil military operations.

...the academy is changing to provide cadets opportunities to train for the types of missions they are most likely to execute...

These new programs of instruction are designed to shorten the learning curve that confronts all Soldiers newly deployed to combat zones by duplicating combat conditions in a more forgiving environment. West Point still teaches basic military skills, but the academy is changing to provide cadets opportunities to train for the types of missions they are most likely to execute in the contemporary operational environment.

Cadet Field Training—the pivotal training event for cadets during the summer between their sophomore and junior years —is one aspect of cadet training most affected by the academy's change in training focus. Until 9/11, Cadet Field Training emphasized movement-to-contact style missions, the types of conventional missions U.S. forces have historically conducted in major conflicts.

At left, a West Point cadet carries a casualty during an Operation Highland Warrior exercise. At right, a West Point cadet fires a .50-caliber machine gun during summer training at Forward Operating Base Buckner.

Operation Highland Warrior, a battalion-level training event revolving around a forward operating base (FOB) similar to those in Iraq and Afghanistan, has transformed Cadet Field Training to match the contemporary operational environment.

Operation Highland Warrior replicates what the cadets will see in Iraq. Air Defense Artillery Soldiers play a pivotal role in the Iraq mission, and FOB Buckner shows cadets the combat power Air Defense Artillery brings to the fight. Located at Camp Buckner, New York, FOB Buckner controls missions throughout the Operation Highland Warrior area of operations. Cadets attending Cadet Field Training during the summer of 2006 entered FOB Buckner through a series of concertina wire barricades, and were greeted by Avenger crew members of the 3rd Battalion, 4th Air Defense Artillery, Fort Bragg, North Carolina; 5th Battalion, 5th Air Defense Artillery, Fort Lewis, Washington; and 2nd Battalion, 6th Air Defense Artillery, Fort Bliss, Texas. The Avengers play a vital role in FOB Buckner's defense, permitting cadets to pass critical situational awareness to leaders located throughout the FOB.

Soldiers from the 1st Battalion, 7th Air Defense Artillery, 108th Air Defense Artillery Brigade, Fort Bliss, introduced cadets to the Patriot weapon system as they moved deeper into the FOB. The Patriot crews provided a professional and informative brief on Patriot capabilities. Many cadets and supporting staff had never seen a Patriot up close. They were awed by the Patriot system's size and sophistication.

Military training for cadets continues after summer training. During the academic year cadets attend military science courses to enhance their classroom knowledge of military operations and procedures. For seniors, these classes are now directly tied to Afghanistan and Iraq scenarios. Most instructors are combat veterans who interject their personal experiences into the lesson plans. The course texts are direct excerpts from Operations Iraqi Freedom and Enduring Freedom lessons learned. Thinking through numerous situations in a classroom setting gives cadets the tools they need to make quick and decisive decisions. The military science courses keep cadets focused on their ultimate task: leading Soldiers in combat.

They answer the hard questions cadets pose about the realities of combat...

During football season, cadets get answers to questions not covered in the classroom by attending the Junior Leader Panel/Combined Arms Tailgate. Air Defense Artillery sends captains, lieutenants, and platoon sergeants just back from Iraq or Afghanistan to serve on the panel or man tailgate displays. They answer the hard questions cadets pose about the realities of combat and are highly effective at tutoring cadets on how to establish and maintain productive command relationships between officers and noncommissioned officers.

Thanks to key changes in the military program at West Point, cadets will leave the academy with a greater understanding of how to perform in stressful combat situations. They will go on to be decisive factors in winning the small-unit type conflicts in which we are presently engaged. The Department of Military Instruction is providing cadets with the basic foundations on how to succeed, both militarily and professionally. Cadets leave West Point prepared for a career of professional excellence. It is up to the individual cadet to master the craft of leading Soldiers; however, with the training received at West Point, their journey to mastery will be less arduous.

Captain Frederick Orndorff is an instructor in the Department of Military Instruction, U.S. Military Academy.

SCANNING

Essential Air Defense Artillery Websites

Stay Abreast of Air and Missile Defense Developments by Adding ADA Websites to Your List of Internet Favorites

Air Defense Artillery Commercial Website

Hosted on a commercial server for high-speed access, the Air Defense Artillery's branch website at http://www.airdefenseartillery.com features original air and missile defense articles and daily updated links to articles posted on news media websites. The website also hosts ADA in Action, a compilation of historical manuscripts and memoirs that capture the combat history of Air Defense Artillery. You will also find links to the ADA Photo Gallery, which features images of ADA weapon systems. A portion of the website, designed for ROTC and West Point cadets, displays links to vital information about career opportunities in Air Defense Artillery.

U.S. Army Air Defense Artillery School

Access essential information and find points of contact on the U.S. Army Air Defense Artillery School homepage at http://airdefense.bliss.army.mil. This website is your portal to Air Defense Artillery School directorates, including the Office, Chief of Air Defense Artillery; Directorate of Combat Developments; Directorate of Training, Doctrine and Leader Development; and Noncommissioned Officers Academy.

Lessons Learned

Search for combat-proven tactics, techniques, and procedures on Air Defense Artillery School's secure Lessons Learned website at https://airdefense.bliss.army.mil/secure/adall. This website is the storehouse for lessons learned gathered from air and missile defense exercises, deployments, and operations, including Operations Iraqi Freedom, Enduring Freedom, and Noble Eagle.

ADA Regimental Handbook

Reinforce your unit esprit de corps by visiting the "First to Fire" branch's heraldry website at http://airdefense.bliss.army.mil/regiments. This website features the shields, crests, lineages, and honors of active Army and Army National Guard Air Defense Artillery regiments.

Air Defense Artillery Association

Purchase or update your association membership online at http://www.firsttofire.com.
You can also order Air Defense Artillery insignia and memorabilia directly from the Air Defense Artillery Association Museum Gift Shop's online catalogue.

ADA Directory

The ADA Directory lists commanders, command sergeants major, telephone numbers, and e-mail addresses for Air Defense Artillery units around the world. Enter your Army Knowledge Online password to access the directory at https://airdefense.bliss.army.mil/secure/directory.

Team Bliss

The Fort Bliss website at https://www.bliss.army.mil is the site to visit if you are relocating to Fort Bliss, Texas. The installation's homepage contains links to Fort Bliss community services, units, and organizations.

Fort Bliss *Monitor*

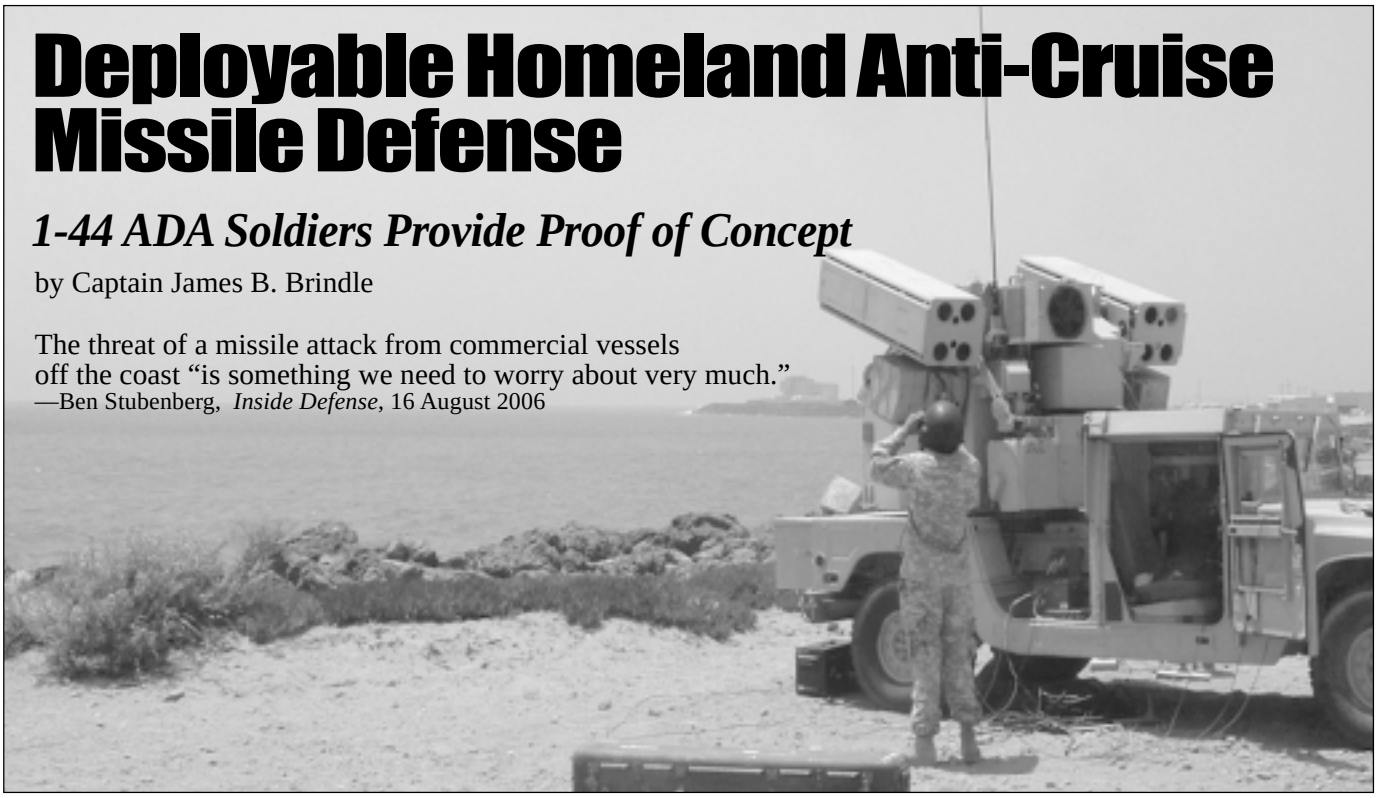
Fort Bliss' installation newspaper will continue to serve as Air Defense Artillery's "hometown newspaper" until the Air Defense Artillery School completes its move to Fort Sill, Oklahoma. You can read the *Monitor* online at http://www.lavenpublishing.com/fortblissmonitor.html

Deployable Homeland Anti-Cruise Missile Defense

1-44 ADA Soldiers Provide Proof of Concept

by Captain James B. Brindle

The threat of a missile attack from commercial vessels off the coast "is something we need to worry about very much."
—Ben Stubenberg, *Inside Defense*, 16 August 2006



Specialist Ryan Flint, E Battery, 1st Battalion, 44th Air Defense Artillery, searches for incoming cruise missiles during NORAD's recent Deployable Homeland Anti-Cruise Missile Defense Proof of Concept Operation at the Naval Air Weapons Station, Point Mugu, California.

The global proliferation of cruise missiles poses a new threat to America. Terrorists could launch a cruise missile from a shipping container aboard a merchant ship far off the United States. With thousands of merchant vessels operating in millions of square miles of ocean off our nation's coasts, a need exists for a deployable homeland defense against cruise missiles.

In July 2006, seventy Soldiers from the 1st Battalion, 44th Air Defense Artillery, a composite air and missile defense (AMD) battalion, participated in NORAD's Deployable Homeland Anti-Cruise Missile Defense Proof of Concept Operation. The Naval Air Weapons Station, Point Mugu, California, hosted the event. All air defense systems within the battalion were successfully integrated with U.S. Air Force fighters and sensors and a Navy Aegis cruiser. This also marked the first time in the history of AMD battalions that a Sentinel radar and Patriot and Avenger weapon systems were placed under the operational control of a single battery commander. The battery team that participated consisted of Patriot Soldiers from B Battery, Avenger Soldiers from E Battery, Sentinel radar crew members from Headquarters Battery, maintenance personnel from F Company, and support personnel and equipment from the 3rd Battalion, 43rd Air Defense Artillery, and the 1st Battalion, 7th Air Defense Artillery.

The battalion began initial planning in May 2006. In June 2006, the battalion conducted rehearsals for the operation at its home station, Fort Bliss, Texas, by exercising state of alert drills and validating the communications plan the unit would use in California. Prior to deployment, the battalion exercised its deployment standing operating procedures, preparing Soldiers and equipment for the mission.

"Defending our country is critical. We treated this exercise as we would any wartime mission," said First Lieutenant Matt Freeburg, the E Battery executive officer who served as the battery team's executive officer.

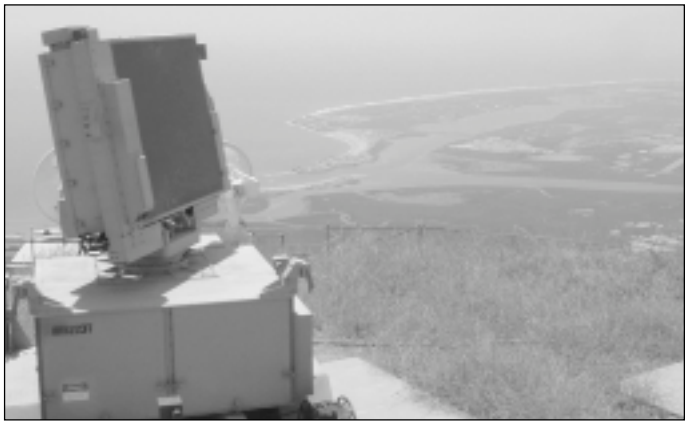
Immediately after arriving in California, the team began off-loading its vehicles. They then performed maintenance checks on equipment and rolled to selected defensive positions. Once all systems were in place and communications were established, the team conducted further rehearsals.

"The training was much more difficult than the actual proof of concept," said First Lieutenant Ronald Yuhasz, Patriot tactical control officer for the mission. "When the exercise actually began, it was just like we rehearsed."

Our new AMD battalions uniquely provide all of the equipment and personnel necessary for multi-tiered, deployable, ground-based air and cruise missile defense. Through the proof of concept operation experience, Soldiers gained a better appreciation of the missions performed by all batteries in the "Strike First" battalion.

"The Patriot missile system gives us incredible stand-off distance against cruise missiles and fast-moving aircraft. They made our job a lot easier," said Sergeant First Class Albert Guiendon, Avenger platoon sergeant.

Specialist Nathan Javins, a Patriot tactical control assistant, was impressed by the Sentinel and Avenger



The Deployable Homeland Anti-Cruise Missile Defense Proof of Concept Operation marked the first time a Sentinel radar, left, and a Patriot missile system, right, were deployed with an Avenger air defense system under a single battery commander.

systems. "I would like to think that Patriot can cover everything. It's great to know that we can rely on Avenger and Sentinel to cover our flanks."

Staff Sergeant Robert Riedel, the Sentinel section leader, gained a unique perspective on the operation. Perched high on a peak near Point Mugu in the shadow of an abandoned radar site, Staff Sergeant Riedel's Soldiers provided data to operators below.

Staff Sergeamt Riedel said, "This mission gave us an opportunity to test a lot of our systems and operate in new environments. I fully believe that this battalion could perform any type of mission, anywhere in the world."

Captain James B. Brindle is the 11th Air Defense Artillery Brigade assistant S-3. He commanded the 1st Battalion, 44th Air Defense Artillery, battery team that participated in the Deployable Homeland Anti-Cruise Missile Defense Proof of Concept Operation.

SCANNING

6-52 ADA Uncases Its Colors at Fort Sill

by Keith Pannel

The 6th Battalion, 52nd Air Defense Artillery (ADA), uncased its colors in a ceremony at Fort Sill, Oklahoma, on 2 July 2006 as the unit officially stood up as part of III Corps and the 31st ADA Brigade headquartered at Fort Bliss, Texas.

Uncasing the colors means, literally, pulling a cover off the unit flag as a gesture symbolizing the movement of a unit from one place to another. The 6-52 ADA's previous home was Ansbach, Germany, where it was part of the 69th ADA Brigade, V Corps, U.S. Army-Europe.

"It really felt like, 'Okay, Fort Sill and the community is ready for you,'" said Lieutenant Colonel Artice Scott, battalion commander. "That's what I felt as I was given command on the field. We're here, and we're a permanent fixture of Fort Sill."

Command Sergeant Major Michael Banes, right, 6-52 Air Defense Artillery battalion command sergeant major, holds the colors while Lieutenant Colonel Artice Scott, left, 6-52 Air Defense Artillery battalion commander, and Colonel Jeffrey Oeser, 31st Air Defense Artillery Brigade commander, unfurl the flag to establish the Ironhorse Battalion at Fort Sill 21 July 2006.

The 31st ADA Brigade is the new parent organization for the Ironhorse Battalion. Colonel Jeffrey Oeser, 31st ADA Brigade commander, was on hand to help Lieutenant Colonel Scott uncase the colors.

"It's been a busy and hectic couple of months, making this transition from Europe to Fort Sill, all done with family, pets, and household goods in tow," said Colonel Oeser. "You all did great!"

The entire 31st ADA Brigade is scheduled to move, along with the U.S. Army ADA School, from Fort Bliss to Fort Sill. The Base Realignment and Closure-directed move, which is expected to get underway in fiscal year 2010, will bring about ten thousand Soldiers and family members to Fort Sill and its host community, Lawton, Oklahoma.

Colonel William Greer, Fort Sill chief of staff, said that during his deployment to Operation Iraqi Freedom, 6-52 ADA's Patriot missile systems protected his Field Artillery unit from air and missile attacks.

"Thanks, personally, for your protection. Although you woke me up several times pretty rudely, I did appreciate you keeping me and my Soldiers safe," Colonel Greer said. "Welcome home Ironhorse Battalion, you look magnificent. May God bless you, the Soldiers, and the families of this great battalion!"

—Keith Pannel is a staff writer for the *Fort Sill Cannoneer*

Employing the Air Defense Airspace Management Cell

10th Mountain Division Air Defense Airspace Management Cell Demonstrates Combat Effectiveness During Operation Iraqi Freedom IV Deployment

by Warrant Officer Steven Fitch

Since its deployment to Iraq in August 2005, the 1st Brigade Combat Team, 10th Mountain Division, Air Defense Airspace Management (ADAM) Cell has proven highly effective in actual combat operations. The cell's ability to properly employ and utilize all systems not only enhances effectiveness of the brigade combat team airspace users, but also prevents fratricide and damage or destruction of equipment. By effectively managing the airspace, the ADAM Cell team has accelerated counterfire reaction times and improved restricted operations zone deconfliction. This has enhanced the combat effectiveness of all fires, unmanned aerial vehicles (UAVs) and rotary- and fixed-wing platforms. The ADAM Cell has become the vital link for all air and missile defense and Army airspace command and control (A^2C^2) operations in the joint theater.

From left to right, Sergeant Michael Hall, Sergeant Douglas Gray, and Warrant Officer Steven Fitch of the Air Defense Airspace Management Cell, 1st Brigade Combat Team, 10th Mountain Division, are deployed for Operation Iraqi Freedom.

The ADAM Cell is a fusion of both Air Defense Artillery and Aviation systems and personnel. It greatly enhances the cell's effectiveness if ADAM Cell Soldiers are cross-trained to operate all the cell's systems. During training, it is important that ADAM Cell personnel get "hands-on" experience on all systems, so the transition to wartime operations can be seamless. This means that personnel should be qualified at the operator level on every aspect of system utilization. At division level, separate cells exist for G3 (Operations, Plans, and Training) A^2C^2, G3 Air, and G3 Air and Missile Defense. The brigade combat team's ADAM Cell performs all three of these functions simultaneously. At any time, ADAM Cell Soldiers can be activating or inactivating a restricted operations zone, submitting an air control measure request, deconflicting UAVs, or monitoring air tracks. Obviously, the need for operators to know and understand all aspects of ADAM Cell systems is vital.

The ADAM Cell has a long list of responsibilities, but the bottom line is maximizing the effectiveness of the brigade combat team airspace by deconflicting all rotary- and fixed-wing aircraft, UAVs, and fires assets in the brigade combat team area of operations. This is accomplished by systems such as the Tactical Airspace Integration System (TAIS), Air Defense Systems Integrator (ADSI), Air and Missile Defense Workstation (AMDWS), and Forward Area Air Defense (FAAD) System, plus a versatile radio suite consisting of UHF, VHF, HF, and satellite communications radios. All these systems reside in the ADAM shelter (AN/TSQ-282D) and are remotely linked into the tactical operations center.

The ADAM Cell manages the brigade combat team airspace while air traffic control agencies control the airspace. The cell manages the airspace by coordinating functions with air traffic control agencies, including activating preplanned fire restricted operations zones, clearing airspace for controlled detonations or counterfire missions, and providing notification of aircraft violating a brigade combat team's restricted operations zone. Air traffic control agencies control the airspace by speaking directly with pilots and controlling where airspace users can fly and at what altitudes. By communicating with air traffic control agencies, the ADAM Cell reduces the time it takes to execute such functions as clearance of fires, controlled detonations, and activating or inactivating restricted operations zones.

The ADAM Cell's versatile radio suite and chat room programs allow operators to monitor and transmit via air traffic control, brigade combat team, aviation, and fires networks. Operators must understand how to communicate with all these different entities. For example, calls for counterfire missions can come at any time. Before fires assets can respond, the ADAM Cell must communicate with air traffic control agencies above and below the coordinating altitude to clear all airspace users from the path of fire units. This can be a stressful situation. Everyone's eyes are on the ADAM Cell crew, which must clear the airspace so the counterfire unit can shoot. Knowing which agencies to talk to, being aware of what information needs to be communicated, and having all systems working enables the cell to accomplish the mission.

The main system for deconfliction is the TAIS, a battlefield automated system designed to meet both A^2C^2 and air traffic control requirements. Its role is to digitize the A^2C^2 and air traffic control en route airspace management processes. This system has proven its importance as a fully automated A^2C^2 tool. The ADAM Cell processes all brigade combat team operation airspace reservation requests through the TAIS. For example, battalions send requests for Raven Small UAV and Shadow Tactical UAV flights. These requests include grids, altitudes, and times of flight. The Fire and Effects Coordination Cell sends requests to the ADAM Cell via the Advanced Field Artillery Tactical System (AFATS). Fire-mission specific information includes the fire restricted operations zone, primary/platoon area hazard restricted operations zone, and the target area hazard restricted operations zone. The ADAM Cell inputs them into the TAIS, displays them, and deconflicts as needed. Once the data is added, the system automatically displays potential conflicts. Aviation units can resolve conflicts by adjusting times, locations, or altitudes of flights. It then becomes the user's responsibility to coordinate with lower and adjacent units to make sure all conflicts are resolved before air operations plans are sent to higher echelons for approval and addition to the air control order.

Another of the ADAM Cell's primary functions is to provide the commander situational awareness of the brigade combat team airspace by receiving and displaying air tracks. The primary system that accomplishes this is the ADSI. The ADSI provides continual joint air track coverage and tactical ballistic missile early warning capabilities through tactical digital information links, satellite intelligence feeds, and local radars. An important feature of the ADSI is the ability to load the air tasking order, which provides detailed information about each track. For example, if an aircraft violates a brigade combat team restricted operations zone, ADAM Cell Soldiers can hook the air track and obtain call sign information, which in turn directs users to the unit for notification and reporting. It also provides the capability of tracking brigade combat team UAV and rotary- or fixed-wing missions. The ADSI provides a direct air track link to the TAIS and AMDWS. For redundancy, the FAAD system receives a local air picture through radio networks and can also forward this information to the ADSI or AMDWS, so if the local area network goes down, users still can receive tracks through radio transmissions.

The ADAM Cell must also alert the units within the brigade combat team area of operations in the case of an enemy tactical ballistic missile launch. The ADSI provides the capability of tracking missile launch points, trajectories, and impact points. The system can receive tactical ballistic data from multiple sources such as the Multi-Function Information Distribution System Radio, the Joint Tactical Terminal Radio, and the tactical local area network. ADAM Cell Soldiers must continually monitor for missile launches and understand proper procedures to follow for dissemination of alerts to subordinate units. If a missile will impact the brigade combat team area of operations, ADAM Cell Soldiers must notify all subordinate units to provide Soldiers valuable time to don chemical protective gear and proceed to assigned bunker locations. This is accomplished by the use of a dedicated tactical ballistic missile early warning radio net.

Sergeant Douglas Gray, an air defense tactical operations center operator, uses system engagement operation software to receive and relay the local air picture.

The ADAM Cell is only as effective as the leaders and Soldiers within it. Leaders must fully understand and articulate ADAM Cell capabilities to commanders. It is important for ADAM Cell leaders to properly train Soldiers and then keep those Soldiers in their positions upon deployment. Developing a cohesive team of air defenders and Aviation personnel is equally important. Some of the tasks traditionally accomplished by the other branch may seem foreign, but with proper training and teamwork, mastery of these tasks becomes attainable. The key is having a "can-do" attitude and seeing the bigger picture.

It is imperative that ADAM Cell Soldiers share information about successful tactics, techniques, and procedures rather than letting lessons learned "fall under the radar" once they redeploy from theaters of operation. Sharing lessons learned can impact every aspect of cell operations, including doctrine, personnel structure, equipment, and training. For example, feedback from deployed ADAM Cells could prompt air and missile defense training developers to add additional tasks, such as TAIS operations and A^2C^2 doctrine, to advanced individual training. Working as a team, we can continue to build on the successful combat debut of ADAM Cells in Iraq and Afghanistan.

Warrant Officer Steven Fitch, a command and control systems technician, is assigned to the 1st Brigade Combat Team, 10th Mountain Division, which is deployed to Iraq for Operation Iraqi Freedom IV. The current deployment is his first experience working inside an ADAM Cell. In addition to his traditional duties as a systems technician, he has been placed in charge of all the brigade combat team's airspace management operations.

On asymmetric battlefields, Patriot scout platoons should be configured in a manner that facilities speed, security, and reconnaissance.

Training for Air and Missile Defense Operations on the Asymmetric Battlefield

by Captain Frank L. Nieto

A shocking thing happened as U.S. and coalition forces, intent on toppling Saddam Hussein from power, surged toward Baghdad. The primary opposition during Operation Iraqi Freedom turned out to be not the Republican Guard but Fedayeen militia fighters operating out of bypassed villages. These black-garbed guerillas harassed the flanks of advancing U.S. columns, ambushing American units and forcing unscheduled pauses in coalition offensive operations.

When American military power is directed against future threats, the U.S. Army will face enemies who have updated their doctrine to echo the asymmetric tactics employed by irregular forces and insurgents in Iraq and Afghanistan. One can easily imagine air and missile defense (AMD) battle positions being attacked by vehicle-borne improvised explosive devices, angry mobs, or special operations forces intent on destroying AMD battle positions to set the conditions for a ballistic missile attack. Adjusting our tactics, techniques, and procedures to defeat this asymmetric threat will set the conditions for success on future battlefields. To succeed, we must develop, test, and implement new doctrine and unit training plans that must be thoroughly evaluated during unit certifications.

As many AMD leaders have recognized, transformation should focus on describing what the future battlefield looks like and answer the question of how to train our Soldiers to fight and win against a new and complex threat that is just as likely to arrive in the form of a truck bomb as it is in the form of an anti-radiation missile. Defeating technologically advanced anti-radiation missiles will require significant research, development funding, and training; defeating the equally lethal truck bomb will require significant changes to AMD training paradigms.

The current battlefield can be described as a red, amber, and green checkerboard on which the situation varies from square to square. Each area of operations, neighborhood, street, or building poses unique challenges. Depending on the location of the defended asset, an AMD

battery may find itself on a red or amber square with significant insurgent or terrorist threats. The next day the unit may find itself on a green square with friendly civilians. Add a chemical or nuclear ballistic missile threat to the scenario above, and you may have defined the battlefield of the future. In this environment, security (air and ground) will be a constant vital concern. Combatant commanders recognize that doctrine has not caught up to the contemporary operational environment. Leaders throughout the military are empowering subordinate leaders to examine doctrine, make needed changes, and let the documentation catch up.

Some AMD leaders argue that asymmetric attacks are not an urgent concern since force protection assets are usually assigned to defend AMD units. An Infantry company manning the perimeter certainly enhances an AMD unit's security posture, but commanders shouldn't assume this will always be the case. In future operations, AMD commanders should posture to receive force protection augmentation, but they should never forget it is their responsibility to plan, train, and execute a wartime force protection plan. When necessary, we must be prepared to stand alone, defending our battle positions against asymmetric as well as conventional attacks.

Achieving this means breaking paradigms and training new sets of skills and tasks with the same rigor and emphasis we place on engagement control drills during gunnery. We can do both at the same time. The AMD commander should rigorously train his or her unit for theater air and missile defense (TAMD) operations under the most austere conditions, which should include little or no attached force protection assets. To achieve this, the unit commander should focus on a comprehensive approach to training TAMD operations, battle position defense, and convoy operations simultaneously with an asymmetric opposing force and civilians on the battlefield.

After studying Operation Iraqi Freedom Lessons Learned, some AMD leaders instructed their subordinate leaders to incorporate the forty Warrior Tasks and nine Warrior Drills into their training plans. The importance of embracing this guidance and meticulously training these tasks and drills with officers and noncommissioned officers (NCOs) leading from the front cannot be overemphasized. It is possible to integrate these tasks into the training plan in a way that does not negatively impact TAMD training. The challenge is to develop a training plan that trains Soldiers to defeat all threats that could emerge on a future battlefield: theater ballistic missile, anti-radiation missiles, cruise missiles, conventional forces, insurgents, terrorists, angry mobs, and civilians. TAMD operations and force protection are not mutually exclusive. These new elements should be incorporated into the Table VIII or XII certification and eventually should be evaluated at a National Training Center-style evaluation.

Applying this comprehensive approach to training will require a training transformation. Each AMD unit must possess the ability to conduct operations on the red, amber, and green squares of the future battlefield. The rotation of Patriot battalions to static positions in Saudi Arabia and Kuwait that filled the decade-long interval between Operations Desert Storm and Iraqi Freedom spawned complacency, leading many to assume Patriot would never support maneuver forces below division level. However, during the recent campaign in Iraq, no corps fought with its peacetime Patriot brigade, and echelon above corps Patriot units maneuvered forward. (A plan to place a Patriot battery in support of a brigade-plus size element of fast-moving cavalry was formulated but never executed.) To support maneuver units in fast-moving offensive campaigns, we should change our priorities of work from drills outlined in Army Training and Evaluation Program mission training plans to quicker, more maneuver-oriented battle drills and enhanced security. We should train for the worst-case scenario: supporting fast-moving maneuver units while defeating emerging asymmetric threats.

While executing TAMD missions in the contemporary operational environment, we can't afford to waste manpower and time constructing heavy earthen bunkers or deploying camouflage against an air attack. Camouflage should not be used to try and hide an entire AMD battle position from an air attack that likely will not happen. Only high-value targets inside the battle position should be camouflaged. Extensive camouflaging consumes valuable time and manpower that could be prioritized to improving battle position security and conducting aggressive force protection operations outside the perimeter. Camouflage should be used to obscure sensitive equipment from enemy informants.

It seems unproductive to raise the hood of a vehicle to hide its position. Raising the hood in a tactical environment doesn't obscure a unit's position from the enemy, but it does fill the vehicle's engine with sand and debris, complicating movement to the next battle position. Stringing concertina wire as an interior belt around the engagement control station is counterproductive. It doesn't enhance site security, but does impede the movement of Soldiers inside the battle position, canalizing defenders rather than attackers. Restricting the movement of Soldiers degrades the battle position. The TAMD battle position of the future shouldn't possess these dated features.

Current march order and emplacement speed standards should be sustained; however, once a new site is established, priorities of work should shift to force protection with the establishment of forward fighting positions and the organization of a roving security patrol. Once forward fighting positions are established and a roving security patrol has been organized, the scout platoon can repack and prepare for a linkup with the supporting unit to reconnoiter the next position. These new tasks and standards should be integrated into the scout/reconnaissance section and reconnaissance, selection, and occupation of position (RSOP) certification. While maneuvering with a supported asset, an AMD unit may occupy a battle position only hours before deploying forward. As Armor and Mechanized Infantry become quicker, it will be important for maneuvering AMD forces

to be quicker, more secure, and more capable of addressing emerging threats. On future battlefields, Soldiers will need to safely and accurately execute no-notice movements twenty-four hours a day. Comprehensive night convoy training and land navigation are critical tasks that should be intensively trained and evaluated to enable our Soldiers to accomplish difficult missions.

Speed must also be understood in a force protection context. Once a battle position is established, every Soldier not in the engagement control station or battery command post should be incorporated into the force protection plan. Additionally, each Soldier needs to understand the myriad of squad collective and individual tasks associated with a hasty defense. Field manuals (FMs), such as FM 7-8, *Infantry Rifle Platoon and Squad*, will set leaders up for success. A well-trained crew with an M2 machine gun emplaced on high ground or in a building can defeat practically any threat. A five-ton truck with a ring mount and a sheet of plywood placed against the windshield and reinforced with sandbags creates a hasty fighting position. This type of position can be quickly assembled and disassembled by storing the plywood in the back of the truck and using the sandbags to reinforce the floorboard against improvised explosive devices. These battlefield expediencies are functional because they add speed and security.

Force protection of the unit must be planned, rehearsed, and trained throughout the training cycle and combat operations. To achieve operational success, the unit requires 360-degree security at all times. Surprisingly, the Army Training and Evaluation Program for establishing Patriot battle positions doesn't sufficiently address these requirements. The Patriot scout platoon should have the lead and be configured in a manner that facilitates speed, security, and reconnaissance. The reconnaissance section of FM 3-01.85, *Patriot Battalion and Battery Operations*, addresses most reconnaissance considerations, but it does not tackle the pervasive issue of security and the importance of speed. The RSOP leaders need to be highly skilled in conducting TAMD-specific route reconnaissance, paying special attention to the usability of routes by AMD equipment and movement through built-up areas that expose vulnerabilities. A scout platoon should possess the ability to clear and mark the route to future AMD battle positions. The table, right, contains proposed changes to the section of FM 3-01.85 that addresses security and speed.

The future RSOP battle drill should begin with the team requesting and the higher echelon unit providing march credits (approvals or clearances) that allow access to tightly controlled main supply routes. The platoon leader and platoon sergeant then conduct a map reconnaissance of the proposed battle position, paying special attention to key terrain, named areas of interest, ambush points, and the chemical, biological, radiological, and nuclear (CBRN) warning. If a CBRN threat exists in the area, the unit departs at mission-oriented protective posture (MOPP) 3, if not at MOPP 0. This portion of the battle drill should be trained and tested, but should not be focused on CBRN since most missions will not have a CBRN threat. The AMD battery needs direct-liaison authorization to the supported unit for movement. This enables the RSOP section to tether itself to the supported unit at the appropriate place and ensures the battery is moving forward at the proper speed while covering the necessary objective areas at the appropriate times.

EQUIPMENT CONFIGURATIONS FOR COMBAT OPERATIONS

- 360-degree vehicle security (tarp sides rolled up, rifles out, and crew-served weapons front and back of two-vehicle convoy)
- Rucksacks combat-loaded on the outside of vehicle for easy access
- Ammunition, water, and special equipment combat-loaded inside vehicles for easy access
- Doors removed and quick-exit foot dowels installed to facilitate rapid exiting of the vehicle
- Space for detainees in vehicles
- Soldiers equipped with binoculars
- Soldiers trained to reconnoiter and report
- One handheld radio per Soldier
- Two Global Positioning Systems per vehicle
- Advanced System Improvement Program (ASIP) radio with amplifier and super-whip antenna for added range per vehicle
- Knee and elbow pads, maximum body armor, and eye protection for all Soldiers
- Security teams equipped with sandbags and entrenching tools to construct hasty fighting positions

Once at the new battle position, the crew establishes the layout of the position and 360-degree security while the first roving security patrol begins its initial area reconnaissance, ranging up to three kilometers—the maximum range of most small arms—in a full radius of the battle position. The security patrol is responsible for becoming familiar with the area and continually reporting all changes in activity inside the area to the commander. The patrol knows all structures within the three-kilometer radius of the battle position and checks or clears them regularly. The patrol makes visual contact with potential threats that meet the commander's critical information requirements and reports to the battery command post, which tracks all potential enemy activity in sector and plans the patrol's missions. The patrol operates twenty-four hours a day, every day, and can be augmented by a quick-reaction force. The patrol should be mounted sometimes and dismounted at other times, but it should always be unpredictable.

Anecdotal evidence from Operation Iraqi Freedom suggests there were problems with RSOP crews during the maneuver phase of the operation. Some RSOP crews were destabilized as commanders or first sergeants replaced RSOP NCOs at their discretion. This turmoil negatively impacted operations by replacing NCOs who had trained for the RSOP mission with NCOs who had not trained or certified with the RSOP crew. Frequently, the commanders' and first sergeants' motivation was to replace NCOs who were performing poorly in key positions, but this should never be necessary during combat operations; training should be sufficiently intensive to flush out weak or non-performing soldiers and leaders prior to deployment. The traditional training and certification of RSOP crews is dated and doesn't equip Soldiers with the necessary skills to accomplish their mission on a battlefield like Iraq.

In many cases RSOP sections have become a repository for "chaptered" Soldiers or Soldiers with disciplinary problems waiting to leave the military. Also, the RSOP section is where non-crewed Air Defense Artillery Soldiers waiting to make a permanent change of station usually are placed. This needs to change if AMD operations are going to meet future challenges. The challenge is to stabilize, train, and certify RSOP crews to the same high standard as engagement control station crews. Our RSOP crews need to master skill sets presently not taught in the branch. New skill sets, such as how to conduct a route and area reconnaissance operation without becoming decisively engaged and how to execute convoy operations in a combat zone, should be intensively trained and evaluated. These skill sets are vital to combat arms units. The AMD scouts also need to be proficient in these skills, which are difficult to learn and have numerous embedded tasks and sub-tasks.

An RSOP crew needs to understand how to select realistic routes to move their equipment, paying special attention to enemy activity and composition, bridges, narrow roads, and "no-go" terrain. RSOP Soldiers should have superior land navigation skills. They should be able to navigate by vehicle or on foot by day or night. The soldiers should exhibit proficiency in small unit tactics. In short, they need to be skilled in numerous battle drills that allow maximum flexibility in dealing with the unexpected.

Additionally, RSOP teams should possess the skills and equipment to call on lethal and precise indirect fires and conduct difficult operations, such as a night passage of lines. Our RSOP soldiers should be small arms experts; not experts in the traditional sense of qualifying expert, but able to execute complex, fast-paced, maneuver live fires and demonstrate knowledge of both engagement and disengagement criteria. Each of our RSOP NCOs should understand how to implement an ammunition management plan, conserving ammunition by "cross-talking" weapons and applying a cyclic rather than a maximum rate of fire based on the threat. Soldiers should learn these skills during range-density weeks that begin with primary marksmanship, weapon zeroing, basic qualification ranges, and close-quarters marksmanship qualification. These events should segue to training in breaking contact, convoying, and conducting defensive live fires under day and night conditions. Finally, the training should culminate with a multifaceted training event, such as a battle position defensive live-fire exercise. These new skills should be rigorously trained and evaluated in a National Training Center environment that abounds with civilians and potential enemy fighters.

The message is clear: all commanders should have a viable security plan and a capable, well-trained scout/RSOP platoon that is able to integrate a force protection unit but can stand on its own and defeat any determined attack while actively leading the unit forward. To achieve this, we need to adjust our training paradigms to match the contemporary operational environment. Living in an era of asymmetric warfare means leaders must quickly adapt to the threat or face the catastrophic consequence of having AMD battle positions destroyed by asymmetric attacks.

With tarp sides rolled up and rifles pointed out, C Battery, 1st Battalion, 44th Air Defense Artillery, Soldiers practice scout platoon tactics, techniques, and procedures for the asymmetric battlefield.

As Air Defense Artillery Soldiers, we bring unique skills to the battlefield, and our capabilities are growing to cover an expanding target list, including tactical ballistic missiles, cruise missiles, unmanned area vehicles, rockets, artillery, and mortars. Defeating these threats, which no other battlefield operating systems can effectively counter, gives us the potential to save thousands of lives. To accomplish our mission, we must change our tactics, techniques, and procedures as quickly as—or quicker than—the enemy. Our willingness to change will set the conditions for victory on the battlefields of the future.

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Spanish amphibious forces maneuver on and off the beach during Exercise Loyal Midas. The 2005 exercise demonstrated the operational capabilities of the NATO Ready Response Force. (Supreme Headquarters Allied Powers Europe photos)

Shaping NATO for the Twenty-First Century Fight

An Investment the United States Can Afford

by Major Tom Nguyen

". . . NATO will no longer have the large, massed units that were necessary for the Cold War, but will have agile and capable forces…"—*General James L. Jones, Supreme Allied Commander Europe*

On a remote South Korean airbase, an Air Defense Artillery battalion executive officer must make a decision about his next duty assignment. One of the options provided by his branch assignments officer is a prized assignment to a NATO Response Force (NRF) unit, the NATO Rapid Deployable Corps (NRDC)-Spain. The battalion executive officer wondered: what exactly is NRF and NRDC-Spain, and more importantly, why is the United States committing U.S. Army personnel to this type of headquarters?

The NRF is a highly ready and technologically advanced force made up of land, air, sea, and special forces components that NATO can deploy quickly wherever needed. Deployed as a stand-alone force, it can prevent conflicts from escalating into wider disputes; as an initial entry force, it can facilitate the arrival of follow-on units; and as part of a larger force, it can contribute to the full range of NATO military operations. It is capable of performing worldwide missions across the whole spectrum of operations, including assistance with evacuations, disaster management, and counterterrorism.

As a component of the NRF, NRDC-Spain plays a key role at the tactical and operational levels of command in shaping the global security environment of the twenty-first century.

In September 2002, Secretary of Defense Donald H. Rumsfeld launched an initiative to create a rapid reaction force in NATO. He argued, "If NATO does not have a force that is quick and agile, which can deploy in days or weeks instead of months and years, then it will not have much to offer the world in the twenty-first century." During the Prague Summit in November 2002, NATO announced that "bound by our common vision embodied in the Washington Treaty, we commit ourselves to transforming NATO with new members, new capabilities, and new relationships with our partners." With this announcement, NATO established an NRF command structure with multiple NRDC organizations formed around six framework nations: the United Kingdom, Germany, Italy, Spain, Turkey, and France. These NRDCs are the centerpiece of the NRF and have the means to respond to developing crises around the world.

The National Security Strategy and National Military Strategy specify the importance of strategic engagements with allies and international partners. In these documents, our national leaders have stressed that international partnerships continue to be a principal source of our strength. Shared principles, a common view of threats, and commitment to cooperation provide far greater security than we could achieve on our own.

For more than fifty years the United States has strengthened the transatlantic link through active participation with NATO partners. In today's Global War on Terrorism our partnerships remain as critical, if not more critical, than they were during the Cold War years. Strategic engagements with our European partners fully support our national objectives of assuring allies and friends, dissuading potential adversaries, deterring aggression, countering coercion, and defeating adversaries. At the NRDC level, U.S. senior military leaders have made

The author, Major Tom Nguyen, right, and Major Fernando Pasquin Agero of the Spanish army discuss coordination and deconfliction of airspace in preparation for an upcoming command post exercise.

a conscious decision to embed U.S. personnel in these rapid reaction forces, a decision that facilitates the engagement mindset at the corps combat headquarters level.

A multinational corps-type headquarters with joint force planning capabilities, NRDC-Spain has a mission to serve not only as a corps headquarters, but also as an allied joint forces land component command as the mission dictates. U.S. personnel assigned to NRDC-Spain provide a myriad of experience and specialties that support NATO's vision of developing rapid reaction forces. The joint duty assignments list currently allocates twenty U.S. personnel to Headquarters, NRDC-Spain. With the exception of Spain as the framework nation, the United States has the largest representation of personnel by any one nation in this headquarters. The U.S. contingent assigned to NRDC-Spain represents experts from the combat arms, combat support, and combat service support branches, as well as foreign area officer specialists. This unique blend of experience and skill sets from the U.S. contingent assists NRDC-Spain leaders in making informed and timely decisions.

NRDC-Spain benefits from years of deployment experience its U.S. partners bring to the table. From small-scale contingencies to major theater wars, U.S. personnel contribute to the development of deployment planning phases such as reception, staging, onward movement, and integration operations in both contiguous and non-contiguous battlespaces. With its collective presence of staff officers and noncommissioned officers, the U.S. contingent participates in NRDC-Spain staff processes, including operational planning. Since NATO's operational planning process closely mirrors the U.S. Army's military decision-making process, U.S. staff officers play lead roles in operational planning and as mentors to staff officers from other nations. This expertise proved critical when NRDC-Spain rapidly deployed in a humanitarian assistance role to support earthquake relief efforts in Pakistan in November 2005, a deployment that occurred in weeks versus months.

The U.S. contingent also brings an enormous amount of knowledge, such as tactics, techniques, procedures, and lessons learned and observed from Operations Iraqi Freedom and Enduring Freedom. This capability, combined with the experiences of our NATO partners in NRDC-Spain, will be tested as the headquarters prepares for future deployments to Afghanistan in support of the International Security Assistance Force mission. Again, the U.S. collaborative efforts in NRDC-Spain will serve as an enabler to further assist in the merging of the International Security Assistance Force and Combined Forces Command-Afghanistan missions as NATO incrementally assumes a larger role in the security responsibilities of Afghanistan.

Through professional discussions, seminars, training exercises, and real-world deployments of this multinational corps headquarters, NATO's armed forces community continues to develop into a credible, flexible, and adaptive force that can respond in times of crises. With assistance from its U.S. counterparts, NRDC-Spain will hone its warfighting skills to effectively operate in the changing global security environment and contend with multiple,

complex, tactical- through strategic-level challenges. Participation by U.S. personnel in NRDC-Spain will serve our partners well as we continue the transformation process across NATO and at all echelons of command.

It is a fact that NATO military units have started down the road of transformation. As discussed earlier, the United States recognizes that it cannot win the Global War on Terrorism as a solitary nation, a philosophy that also guides the transformation of NATO forces. General Peter Pace, Chairman of the Joint Chiefs of Staff, captured this thought succinctly during a recent Allied Command for Transformation (ACT) change of command. He stated, "There is no country so large and powerful that it can do this alone, and no country so small that it cannot contribute." The ACT's effort to shape NATO's transformation will focus in the areas of concept development and military experimentation. As explained by Admiral Sir Mark Stanhope, the ACT deputy commander, "At the core of our mission are three fundamental themes that enable transformation. First is deployability—enabling a global reach. Second is interoperability—the ability to work and communicate with all NATO and partnership nations. Third is for ACT to be an engine for change and provide management of the change agenda."

U.S. personnel assigned to NRDC-Spain will assist in this endeavor as enablers and integrating agents for change. Some have served in units that have undergone transformation in the form of enhanced battle management command, control, communications, computers, and intelligence equipment and organizational changes, while all have witnessed doctrinal changes such as effects-based operations planning as it relates to the contemporary operational environment. With its varied background and expertise, the U.S. contingent offers observations of current transformation initiatives and their impact on the U.S. military across the doctrine, organization, training, leadership, education, personnel, materiel, and facilities domains. To this end, NRDC-Spain benefits from opinions both positive and negative from its U.S. counterparts that can be leveraged when making decisions on implementing transformation programs driven by the ACT.

U.S. senior military leaders have laid the foundation for active engagement with our NATO partners by emphasizing the need to have U.S. personnel present in the NRF structure and specifically at the NRDC level.

A Spanish officer shows the different stages of the construction of a Pakistani high school to General Sir John Reith, Deputy Supreme Allied Commander Europe, at right, on 5 January 2006 in Bagh, Pakistan. (Supreme Headquarters Allied Powers Europe photo)

Strategic engagement from all levels of NATO organizations, to include NRDC-Spain, sends a clear message that serves to dissuade and deter our current as well as potential adversaries. This engagement strategy also supports the National Defense Strategy, which states, "We will provide assurance by demonstrating our resolve to fulfill our alliance and other defense commitments and help protect common interests." Continuing to assign U.S. personnel to NRDC-Spain in pursuit of this endeavor is both prudent and necessary.

As the battalion executive officer described in the opening paragraph of this article, I decided to accept the assignment to NRDC-Spain, and I'm convinced it was the right decision. Serving with NRDC-Spain has been a rewarding and challenging professional development experience—an assignment I would highly recommend to any Air Defense Artillery officer offered a similar assignment opportunity.

Major Tom Nguyen currently serves as NRDC-Spain's Chief of Air Defense and Army Airspace Command and Control Plans Officer. Major Nguyen formerly served as the 35th Air Defense Artillery Brigade S3 and as the battalion executive officer for the 2nd Battalion, 1st Air Defense Artillery, from July 2003 to July 2005.

SCANNING

Boeing Converts Avengers into Multi-Role Weapon Systems

According to the *Huntsville Times*, Boeing has upgraded Avenger air defense systems with heavier armor and turrets that rotate 360 degrees. In the article, headlined "Troops Find New Use for Weapon," published 18 August 2006, the newspaper reported that Boeing engineers modified eight Avengers, essentially changing them into what Boeing now calls Agile Multi-Role Weapons Systems. The newspaper said Boeing also plans to mount Javelin missiles and rockets in pods on the Agile Multi-Role Weapon System. "Soldiers are using the Avenger system in cities and for convoy protection riding along with other vehicles—not really what the system was originally designed for, but it works," Debra L. Rub-Zenko, Boeing vice president for Integrated Missile Defense, told *Huntsville Times* writer Shelby G. Spires.

DARPA and the Future of Army Air and Missile Defense

by Captain Paul K. Chappell

Captain Paul K. Chappell wearing the "Berkeley Exoskeleton," a robotic suit that assists the wearer in carrying heavy loads.

The Defense Advanced Research Projects Agency (DARPA) produces some of this country's most high-tech innovations. Both past and present, these technological advances have achieved far-reaching applications in both the military and civilian sectors. In the future, DARPA will continue to explore the boundaries of scientific feasibility in its search for high-payoff discoveries in various fields of technology. Throughout this article, I will describe DARPA's mission and how its discoveries have impacted and will continue to impact the military and civilian sectors—Air Defense Artillery in particular.

From 13 April through 13 July 2006, I served as a DARPA intern on behalf of Air Defense Artillery. My job was to learn about all of DARPA's high-tech programs and report to U.S. Army Training and Doctrine Command which projects were most viable and applicable to the military. DARPA also created this intern program so that the selected service members could serve as liaisons between DARPA and their respective branches as their military careers continue.

DARPA has established an impressive track record. In the past, the agency has been responsible for developing such innovations as the Internet, Global Positioning System, Stealth Fighter, first network firewall, first computer mouse, M-16 rifle, Army Tactical Missile System, Global Hawk, Joint Strike Fighter, Predator unmanned aerial vehicle (UAV), Sea Shadow, Ground Surveillance Radar, Joint Surveillance and Target Attack Radar System, and Saturn Rocket. What makes this possible is DARPA's two-billion dollar annual budget, the many forward-thinkers they employ who are pioneers and experts in their field, and DARPA's mission statement: "DARPA's mission is to maintain the technological superiority of the U.S. military and prevent technological surprise from harming our national security by sponsoring revolutionary, high-payoff research that bridges the gap between fundamental discoveries and their military use."

When President Dwight D. Eisenhower convened a commission to analyze why the Soviet Union had beaten us into space with the launch of the Sputnik—the world's first artificial satellite—he learned that the United States possessed the technical expertise and ability to successfully deploy the first space satellite, but that the country lacked the attention and concern necessary to make this a reality. To remedy this problem, President Eisenhower created DARPA, which pursued high-tech innovation and handled all space research prior to the creation of NASA. The paragraph below, extracted from DARPA's strategic plan, describes the agency's unique charter.

DARPA is the Secretary of Defense's only research agency not tied to a specific operational mission. DARPA supplies technological options for the entire department. DARPA is designed to be the "technological engine" for transforming the Department of Defense. This unique role is needed because near-term needs and requirements generally force the operational components to focus on nearer term needs at the expense

of major change. Consequently, a large organization like the DoD needs a place like DARPA whose only charter is radical innovation. DARPA's approach is to imagine what a military commander would want in the future, and then accelerate that future into being—thereby changing people's minds about what is technologically possible today.

The effectiveness of DARPA's strategic approach can be seen in the many innovations that the agency has developed that will greatly impact how air and missile defense will someday be waged. In the near future, air threats will consist primarily of low-flying UAVs, increasingly affordable cruise missiles and tactical ballistic missiles, and technologically superior anti-radiation missiles. Due to these innovations in air power, the U.S. Air Force will experience a decreased ability to guarantee protection of U.S. ground forces through air superiority alone. Not only will tactical ballistic missiles continue to threaten U.S. ground forces, but low-flying UAVs and cruise missiles will become more available and affordable to our adversaries, thus allowing them to effectively deploy chemical, biological, nuclear, or conventional munitions. Eventually, the cost of these weapons delivery platforms will become so inexpensive that developing countries will be able to afford low-flying UAVs and cruise missiles in addition to chemical and biological agents.

Lieutenant Colonel Edward Tovar, a DARPA intern, poses with a prototype of "Big Dog," an unmanned ground vehicle that the Marine Corps plans on fielding within the next six years.

Within the next several decades, the trend in air power will evolve toward unmanned air systems and long-range standoff strike capabilities. The industrialized countries of this world will develop unmanned aerial hunter-killers that will replace traditional fighter and bomber aircraft. Without a cockpit, human beings, and life support systems, these aircraft will be more versatile and survivable. For example, these hunter-killers will be able to perform incredible maneuvers in flight that a human being would not be able to withstand due to overwhelming g-forces.

A DARPA project named Joint Unmanned Combat Air Systems (JUCAS) is an example of the direction in which our industrial adversaries will inevitably evolve their air-to-surface capabilities. JUCAS, which exists as a prototype that has been successfully flight tested, consists of multiple aircraft that are autonomously controlled without direct human intervention. Once a target is selected for the system, the JUCAS aircraft determines the best flight path to their objective. The JUCAS aircraft, which can work in groups ranging from two to a dozen autonomous planes, will then conduct their mission upon the objective. Like a swarm of robots from a science fiction movie, these aircraft will overwhelm the target by jamming enemy radars, bombing air defense systems, and destroying the intended asset. The JUCAS aircraft will decide amongst themselves which aircraft are within ideal jamming range and optimal intercept range, and which plane falls within the best conditions to destroy the target of interest. All of this is approved by a human in the loop who is located at a safe location, but it is the aircraft themselves that think and decide how to best destroy their target.

Air power will become more threatening in the near future, ranging from affordable low-end systems amongst our adversaries in developing countries to advanced autonomous systems amongst our industrial adversaries. Fortunately, DARPA is working on programs that will improve our air defense capabilities. Where short-range air defense is concerned, DARPA is considering developing technology for a Multi-Modal Missile that will replace both Stinger and Javelin. The Multi-Modal Missile will be a shoulder-fired ground-to-surface missile that can be mounted on a Predator UAV or a Bradley Fighting Vehicle, or can be carried by an individual Soldier. The Multi-Modal Missile will have a single warhead. By operating a simple switch, a Soldier will be able to change the warhead discharge so that it can optimally penetrate ten inches of reinforced concrete in an opposing bunker position, or allow the warhead to effectively destroy an enemy UAV, low-speed cruise missile, or ground armored vehicle. Since future air power will consist of UAVs that can fly nap-of-the-earth to avoid detection by ground radar and air force assets, short-range air defense will play an increasingly critical role throughout this century.

To combat future air threats, DARPA is developing innovations in sensor and radar technology as well. The Integrated Sensor is the Structure is a powerful sensor that consists of an integrated radar deployed on a high-altitude airship. This airship will hover at seventy thousand feet, tracking UAVs, cruise missiles, ground vehicles, and even people within an area of three hundred kilometers. This technology, when coupled with other DARPA programs such as Low-Cost Cruise Missile Defense, will provide the United States with an integrated UAV and cruise missile defense capability for homeland defense and major combat operations abroad.

DARPA is also developing innovations in medium- to long-range air defense. The most dramatic breakthrough will come in the form of solid-state lasers. The advantage of an air defense system based upon laser technology is that the directed beam, traveling at the speed of light, can impact and destroy an incoming missile almost instantaneously. With this comes a level of accuracy, speed,

and precision that the missiles of today cannot achieve. However, the disadvantage of laser technology is that the laser beam's strength becomes diluted in poor weather such as rain, fog, or dust storms. A future air defense perimeter will most likely consist of solid-state lasers as the primary line of defense, due to laser systems' unparalleled accuracy, speed, and precision, while an advanced missile system will serve as the secondary method of protecting defended assets in case of poor weather. DARPA is working on a variety of laser systems that have already reached the prototype stage of development. I was able to witness the test firing of such a prototype, and once the power and heat-management issues inherent to solid-state lasers are resolved, this interceptor of science fiction will become a reality of science fact. DARPA is currently developing the High-Energy Liquid Laser Area Defense System (HELLADS), a liquid-cooled solid-state laser that will, for the first time, allow this technology to become applicable on the battlefield.

Located in Arlington, Virginia, DARPA is a civilian organization with more than 250 employees. With only one Army member, a colonel, on its staff, DARPA presents a diverse and unique work environment that allows interns—drawn from all ranks of the military services and pay grades of federal agencies—to witness a wide array of interactions between various government agencies.

During my internship, I listened to briefings that Dr. Anthony J. Tether, the DARPA director, gave to the deputy secretary of defense, secretary of the Navy, British Royal Air Force chief of staff, director of the National Geospatial-Intelligence Agency, and commanders of the U.S. Army's Training and Doctrine Command, U.S. Army South, and Joint Forces Command. Also during my internship, DARPA sent interns to many of their laboratories and research centers in U.S. cities, including Los Angeles, San Diego, San Francisco, Denver, Tampa, Albuquerque, and Boston.

Given full access to all DARPA programs and program managers, the other interns and I witnessed remarkable projects such as a robotic exoskeleton, air defense laser systems, a thought-controlled bionic arm, robots shaped like dogs, autonomous robot vehicles that successfully navigated 132 miles of desert terrain without human intervention, high-tech autonomous aircraft, morphing-wing aircraft that can alter their wing shapes to perform a variety of missions, a device that can detect a human hiding behind a wall or in a room, a UAV the size of a small bird, and a holographic sand-table display.

DARPA's entire mission is to transform technologies that seem impossible into realities that can benefit the military. Because DARPA's innovations are so revolutionary, the agency's work also impacts the civilian sector. The Internet, Global Positioning System, and first computer mouse are examples from the past, but in the future, DARPA will continue to innovate and bring futuristic technologies to the present.

There are no cease-fires in the war for technological supremacy...

Since Air Defense Artillery is such a highly technical branch, it is one of DARPA's primary beneficiaries. There are no cease-fires in the war for technological supremacy, and DARPA will continue to provide the branch with new technologies, enabling us to stay ahead of advances in threat technologies and accomplish our missions on future battlefield.

Captain Paul K. Chappell is the deputy chief of the Doctrine, Training, Requirements, and Lessons Learned Division, Directorate of Training, Doctrine, and Leader Development, U.S. Army Air Defense Artillery School, Fort Bliss, Texas.

SCANNING

DARPA Interships

The Army participates in two internship programs with the Defense Advanced Research Projects Agency (DARPA). One program is the Service Chief's Program (SCP), which is available to all services. The Army tasks Forces Command for officers to participate in the SCP program. The Army began participating in the SCP in 2003. Army participation was formalized in March 2004, when the DARPA director signed a memorandum of understanding with the director of the Army Staff. The other program that enables Army officers to participate in DARPA internships is based on a private agreement between DARPA and the commander of the U.S. Army Training and Doctrine Command. This program, which has also been in effect since 2003, continues under a verbal agreement.

Interns are selected differently for the two programs. For the SCP program, Forces Command conducts an internal selection in response to SCP tasking orders. The tasking is for one officer, per three-month rotation, for a total of four participants per year. Training and Doctrine Command conducts its own selection board to pick two officers for two-month rotations, with a total of 12 participants per year. At these rates, the Army sends sixteen interns to DARPA per year. DARPA hosts about 44 interns per year from all participating organizations. These other organizations include the Air Force (eight interns), Marines (four interns), Navy (six interns), National Geospatial-Intelligence Agency (four interns), and Joint Forces Command (six interns).

Patriot Weapons and Tactics Training Program

by Matthew J. Villa

Our main goal as Patriot air defense leaders is to continuously increase the combat readiness of our battalions and batteries. This article outlines how Patriot battalions and batteries can develop a weapons and tactics training program to meet this goal. It discusses the role of battery and battalion trainers and how they fit into the overall training management scheme. This article describes what a weapons and tactics training program could look like. It is not necessarily "the answer" but rather "an answer" based on the realities of the training needs of the Patriot force today. It is meant to focus training programs and stimulate discussion.

The Battery Trainer

The Patriot battery training officer is usually the fire control platoon leader. This platoon leader is most often a senior lieutenant who has more tactical control officer experience than the battery's other lieutenants. This lieutenant's main role in the battery is to develop and ensure the program is in sync with the battery commander's overall weapons and tactics training program. As the battery trainer, he or she must be the battery commander's subject-matter expert. Aside from knowing Patriot capabilities and limitations, he or she must be the expert on air defense mission planning and threat system capabilities and limitations. The battery trainer must also be skilled in briefing the plan to the battery's crews and debriefing them through after-action reviews.

Patriot batteries fight as part of the joint team in the overall integrated air defense system of systems. The battery trainer must also keep the unit focused on this joint fight.

The battery trainer is responsible for all appropriate supplementary courses of instruction, as well as developing a program of tactical seminars and delivering classroom instruction followed by in-the-chair engagement control station training. Ultimately, the battery trainer is the "guardian of training" for the battery. He or she ensures that all training follows the principles defined in Field Manual 7-0, *Training the Force*. The battery trainer sees that all training meets the Army Training and Evaluation Program and gunnery standards. Finally, the battery trainer makes sure all training is supervised and evaluated to standard.

The Battalion Trainer

The Patriot Top Gun Course and Master Gunner Course have greatly enhanced the effectiveness of the Patriot battalion trainer, who is generally the battalion's fire direction section officer in charge. Assisted by other tactical directors, the battalion trainer works hand-in-hand with the battalion's electronic missile maintenance officer. The battalion has multiple missions. The first is to develop, standardize, and maintain the training program throughout the battalion. This ensures that every crew is trained and evaluated to the same standard. The second mission is to develop the battalion's tactics, techniques, and procedures, which are outlined in the tactical standing operating procedure. However, the tactical standing operating procedure does not cover every area and, of course, each

LEVEL	TABLE	SUBJECT MATTER
Basic Gunnery Tables	I II III IV	System Skills Ready for Action Drills Battle Drills System Capabilities/Tactics Certification
Intermediate Gunnery Tables	V VI VII VIII	Air Defense Operations/Missile Reload Day & NBC March Order/Emplacement Practice Table V and VI Certification
Advanced Gunnery Tables	IX X XI XII	Air Defense Operations/Missile Reload Night & NBC March Order/Emplacement Practice Table IX and X Certification

theater and situation has its differences. The battalion trainer ensures each crew follows the same tactics, techniques, and procedures as directed by the battalion commander. The battalion trainer also disseminates lessons learned from training exercises to all the other batteries. Most importantly, the battalion trainer must train the battery trainers on how to train. He or she acts as a mentor to the battery trainers, providing them moral support and encouraging them to work together to achieve battalion training goals.

Concept Origin

The Patriot weapons and tactics training program concept is derived from U.S. Air Force and Naval Aviation programs that feature four training phases: combat capable, combat ready, combat qualified, and fully combat qualified. While in Aviation the combat capable phase is taught in a formal environment, the other phases are trained at unit level. These phases fit together in a fashion similar to the way the components of Patriot's own training program fit together. The combat capable phase is similar to Patriot advanced individual training while the combat ready phase is similar to Patriot Gunnery Table IV. The combat qualified phase is similar to Patriot Gunnery Table VIII, and the fully combat qualified phase is similar to Patriot Gunnery Table XII.

Principles of a Weapons and Tactics Training Program

Patriot weapons and tactics training programs should be developed using a systems approach. The five steps of the systems approach are:

- **Analyze**—determine unit ability based on current doctrine and contingency plans.
- **Design**—develop objectives for each training event based on the mission essential task list.
- **Develop**—structure the training plan.
- **Implement**—execute the training plan.
- **Evaluate**—conduct a constructive debrief.

Training Levels

The Patriot weapons and tactics training program has three levels of training: individual, collective, and integrated. Individual training features crew drills, ready-for-action drills, and Table IV familiarization. Collective training teaches Soldiers to fight as integral parts of a crew, battery, and battalion. Integrated training teaches units to fight as a joint team.

The emphasis of the weapons and tactics training program must be on fighting as a battalion and, ultimately, as part of the joint team. The focus of all individual and collective training is to prepare for integrated training.

The mission essential task list drives the Patriot weapons and tactics training program. Since there is no way to train to proficiency in all mission essential tasks, the tasks must be prioritized. Furthermore, trainers must work with commanders to accomplish the integration and deconfliction necessary to conduct mission essential training while at the same time ensuring all mandatory required training, outlined in Forces Command (FORSCOM) Regulation 350-1, *Active Duty Training For FORSCOM Units,* is also conducted.

Frequent Problems with Current Training

Mission essential task lists and gunnery tables clearly define the broad objectives—the "what" of Patriot training—but the "how" of achieving those objectives is not clearly defined. No individual standardized document clearly spells out to a battery trainer how to train his or her crews, although the FORSCOM Patriot Gunnery Program and the Army Training and Evaluation Program provide references and guidance. Moreover, leaders are not doing a good job of mentoring young trainers on how to train. While the Master Gunner Course is increasing the supply of noncommissioned officers qualified to serve as Patriot trainers, graduates remain few and far between. Furthermore, oversight is often weak. Units often plan individual training, such as range and funeral details, down to the tiniest detail, but often prepare no detailed plan for mission essential training.

Another problem is that, traditionally, Patriot weapons and tactics instruction is focused on individual rather than collective training. Table VIIIs are often focused on certifying certain crew members or certain crews rather than the battery as a whole. The goal is often just to certify another Reticle Aim Level (RAL) 11 crew or an extra reload crew rather than increasing the unit's ability to fight. Evaluations are pushed through in the hopes that members "will pass this time," and then we can say, "they are good to fight."

The result is that a battery's or battalion's combat readiness is only marginally increased while the battery, as a whole, rarely certifies its ability to fight, and the battalion, as a whole, almost never certifies its ability to fight. Batteries rely on a few strong individuals to carry crews in certifications. As an example, an average engagement control station crew has one highly qualified crew member, a basically qualified crew member, and a third crew member just out of the Basic Officer Leadership Course, formerly known as the Officer Basic Course, or just out of advanced individual training. Yet they are graded as trainable ("T") because the highly qualified person can pull the crew through.

How to Develop a Weapons and Tactics Training Program

The weapons and tactics training program should be developed in the eight steps described below.

- **Formally establish the weapons and tactics training program.** As part of this step, the commander must recognize his or her responsibilities. The first responsibility is to ensure the program exists and the training is conducted. The second responsibility is to ensure Soldiers have the necessary equipment, maintain the equipment, and observe safety precautions while operating the equipment. Next, the commander must

formalize the position of trainer in writing and designate it as the trainer's primary responsibility. Commanders must give trainers the authority to act as liaisons with higher and adjacent commands and direct the training within the battalion or battery to accomplish the plan.

• **Conduct a unit assessment.** The trainer conducts a unit assessment by sitting down with the commander and answering two questions: "What must the unit be able to do?" and "What can the unit do now?" Inherent in these questions is the need to develop quantifiable metrics that determine how the unit measures these abilities.

• **Receive commander's guidance.** Once the questions in step two (above) are answered, the commander will issue his or her verbal or written guidance. The trainer must directly link training goals and priorities to the commander's guidance.

• **Develop the plan.** The key to this step is to develop a planning calendar. Developing the planning calendar is not difficult. We already have a plan: the gunnery tables. Following each table is the correct and best way to implement the weapons and tactics training program. Units must go beyond the limits of gunnery and identify major events such as a joint training exercise, a unit evaluation exercise, or a mission rehearsal exercise to serve as the final event of the training. These major events should symbolize culminating points in your training plan—the milestones you work toward. Keep in mind that while developing your grand plan of attack for those major events, individual required training must also be accomplished, so ensure you carry out the coordination and deconfliction that is necessary.

• **Develop unit-controlled training.** Based on the assessment of the unit's proficiency, develop controlled exercises. These can range from simple Table IV classes or crew drills to more complex events such as command post exercises or mobility field training exercises. Design objectives to prepare for more major events, ultimately leading to the final event.

• **Coordinate.** All supporting elements need to be aware of the plan and be able to participate. Remember, training to the mission essential task list is not only for Patriot missile system enhanced operators/maintainers or Patriot launching station enhanced operators/maintainers training. Finally, always maximize integration. Battery-level training needs battalion support and battalion-level training needs brigade support. Once the preliminary stages are complete, it's time to start training.

• **Supervise.** An evaluator needs to be available to observe execution of training events. The evaluator can be either internal or external, depending on the level of training. The evaluator can be strictly an evaluator with a checklist, a combat trainer, or an observer/controller. What is important is that some outside eye is watching the training and providing feedback. Specifically, the evaluator can assess the progress of individuals through the gunnery tables and other developed matrices. The evaluator will provide an analysis of the success or failure of the training plan and an evaluation of the battery's or battalion's increased proficiency to the commander and trainer. This feedback will allow the commander and trainer to adjust the training plan as required.

• **Document.** This is done in two ways. The first is through training record updates. Training record updates are essential. Standardized forms will help units track and document collective and individual progress toward training objectives. The trainer must keep, in an organized format, detailed records of all training. The second way is through after-action reviews. It is essential that the trainer provide adequate debriefs after each training evolution. After-action review conclusions should be recorded and disseminated to other units so everyone can benefit from the lessons learned. Even the most basic motor-memory training is virtually worthless without an after-action review. Training without a written after-action review is only as good as the unit's "memory," which suffers "memory lapses" as Soldiers rotate to other assignments. We must stop reinventing the wheel.

Conclusion

Our collective and exclusive goal is to increase the combat readiness of our batteries and battalions. To achieve this, units must establish and use a formalized weapons and tactics training program.

Matthew Villa received his commission from West Point and served as a Patriot officer for over six years as a fire control platoon leader and tactical director. He currently serves in the New Mexico Army National Guard. He was an engagement control station/information coordination central observer/controller with the Edge's Coyote Observer/Controller Team at Fort Bliss, Texas. He currently works in the Experimentation Branch of the Air and Missile Defense Battle Lab.

SCANNING

Israeli-Hezbollah War

At a crude level, the obvious lesson is that the United States and its allies not only need missile defenses, but defenses against cruise missiles, UAVs [unmanned aerial vehicles], artillery, rockets, and short-range, low apogee-flight time ballistic missiles. In practice, however, such defenses may simply be impractical or too expensive, and at best seem to be only a partial solution. This is a key issue that needs close examination when new calls come for immediate ATBM [anti-tactical ballistic missile] deployments or funding various laser and energy weapons. It is remarkably easy to make such concepts work on paper and have them soak up large amounts of development money with little or no practical outcome. Active missile defense is a costly and uncertain option, not a new form of religion.

—"Preliminary Lessons of the Israeli-Hezbollah War," Center for Strategic and International Studies

The Making of an ADA Warrant Officer (Part II)

A warrant officer recruiting briefing started Warrant Officer Heather Anne Ritter (then Mosolovich) on the path from enlisted Soldier to warrant officer.

Graduation from Warrant Officer Basic School is Only the First Step in the Transformation of an ADA Enlisted Soldier into an ADA Warrant Officer

by Warrant Officer Heather Anne Ritter

Editor's Note: The first installment of Heather Anne Ritter's account of her transition from an enlisted Soldier to a warrant officer appeared in the January-March 2006 issue of *Air Defense Artillery* magazine, shortly after she graduated from the Warrant Officer Candidate School. In this, the final installment, she graduates from the Warrant Officer Basic Course (WOBC), marries, and reports for duty with the 69th Air Defense Artillery (ADA) Brigade.

Most soldiers think warrant officers know it all. They believe that warrant officers are blessed with the gift of telepathy, an extrasensory perception that tells them what's wrong with equipment before it goes wrong. When the equipment does break down, every Soldier knows the solution: you simply ask the "Chief." Some Soldiers appear convinced warrant officers can correct malfunctions simply by the "laying on of hands." In an imperfect world, Soldiers expect warrant officers to be infallible. Making reality match the image is difficult, if not impossible, but as warrant officers, we do our best.

After my graduation from the Warrant Officer Basic School at Fort Rucker, Alabama, I briefly returned to my unit, the 3rd Battalion, 43rd Air Defense Artillery (ADA), at Fort Bliss, Texas, where I temporarily resumed the duties I had performed as an enlisted Soldier. My transition from enlisted Soldier to warrant officer was not fully complete. To continue wearing the warrant officer insignia I had pinned on at Fort Rucker, I would have to graduate from WOBC, and I had only a few weeks to prepare.

The purpose of WOBC is to certify warrant officers as technically and tactically competent to serve as warrant officers in a designated military occupational specialty (MOS). The course prepares newly appointed warrant officers for their first duty assignments. WOBC is the first major test warrant officers must pass after graduating from the Warrant Officer Basic School to continue serving in the Army as a warrant officer. The primary focus of WOBC is MOS specific, augmented with common-core subjects. The ADA WOBC is divided into two tracks: MOS 140E, Air and Missile Defense Tactician/Technician, and my track, MOS 140A, Command and Control System Technician. The course is conducted at Fort Bliss within the ADA School.

The day I reported for WOBC, I possessed the same skills and knowledge as any other operator and basic

After graduation from the Warrant Officer Basic Course, Warrant Officer Heather Anne Ritter drew an assignment to the 69th Air Defense Artillery Brigade in Germany. Above, 69th Air Defense Artillery Brigade Soldiers parade during a change of command ceremony.

maintainer in my enlisted MOS (14J, Air Defense Tactical Operations Center Operator/Maintainer). I knew a couple of ways to "cheat" the systems and how to make things work, sometimes using expedients that cannot be found in technical manuals, but I knew WOBC would challenge me to elevate my level of expertise.

There were only six warrant officers in my WOBC class. Although I was the first female ever to attend ADA WOBC, I was confident because my enlisted MOS was a designated "feeder" MOS for MOS 140A. My classmates from enlisted MOSs that did not match up as well with the 140A track faced a more difficult challenge. Most of us came from Fort Bliss ADA units with enlisted backgrounds in MOS 14J and MOS 14E, Patriot Fire Control Enhanced Operator/Maintainer, but for the first time, a student from MOS 14S, Avenger Crewmember, was attending the course. There were also two Signal Corps Soldiers from MOS 25F, Network Switching Systems Operator/Maintainer backgrounds.

We had a specific lesson plan that we followed throughout WOBC. Our classes were similar to classes that newly commissioned second lieutenants attend when they report from ROTC campuses or West Point for Basic Officer Leadership Course III, which has replaced the Officer Basic Course. Chief Warrant Officer Three Carter Gibbs and Chief Warrant Officer Two Mitchell Brown were our WOBC instructors. They taught us the intricacies of "conduct becoming an officer" and military history. We also studied and conducted the military decision-making process and presented staff call briefings to our instructors. We each read a book from the Army chief of staff's reading list and wrote an informative paper on it. We also learned to develop higher levels of teamwork and cohesion than we had experienced at Warrant Officer Candidate School.

We learned to network with one another and all the other 140As. We were each assigned two special duties. I was the class project leader and the class social officer for my WOBC class.

At ADA WOBC, group tasks were not emphasized as much as individual tasks. It was your responsibility to make sure that you understood what was being taught, and it was your responsibility to make sure you knew how to perform the task at hand before you left for the day. However, individual responsibility did not negate our responsibility to the team. If one person did not understand how to perform required tasks, we would help that person until he or she mastered the tasks. The day did not end at 1700, the hour Soldiers are programmed to think of as the end of the duty day; it ended when you understood and accomplished the objective at hand.

Physical training took place every day at WOBC, just as it does throughout the military. Most soldiers don't see officers conducting physical training, but believe it or not, officers also sweat to attain physical standards. We also attended daily formations, just like Soldiers in regular units.

After nineteen weeks of the nearly twenty-week course, I was tired of being in school. I really could not wait to go to my next assignment and back to work. I envisioned what lay ahead of me, and I was not scared at all. But as the day of graduation approached, we started hitting the panic button. We were suddenly about to experience life without the schoolhouse safety net; we were about to be pushed out of the nest into the field where we

MOS 140A, Command and Control System Technician, Duties

Coordinates the activities of maintenance personnel and manages equipment and site assets for the installation, repair, maintenance, and modification of Army air defense command and control systems, ancillary equipment, and tools. Develops maintenance SOPs; analyzes and interprets technical data employed in the diagnosis of malfunctions, maintenance, and repair of equipment. Advises and instructs repair personnel on specialized tests to isolate causes of equipment failures and malfunctions. Estimates repair priorities based on mission, type of work to be performed, and availability of parts and personnel. Advises commander or staff officers on command and control system capabilities and limitations; makes recommendations of changes to computer software based on mission and operations requirements. Performs other officer level duties essential to the unit mission.

would have to cope without the resources and expertise so readily available at WOBC. For me, this was hard to imagine, and the more I thought about it, the more stressful the thought of graduating and having to shoulder warrant officer responsibilities became. Daily mentoring sessions with my sponsor helped allay my fears.

My biggest criticism of 140A WOBC is that there was not enough time for us to completely understand each piece of equipment. Sometimes we did not have a chance to work on the equipment because 14J advanced individual training students were working on the same equipment. There were other occasions when the ADA School could not provide all components of sets of equipment, a shortfall that seriously hindered training progression. Sometimes it was frustrating, and you would become bored. At other times, you would just move on to something else. The course was what you made of it.

At graduation we were officially indoctrinated into the 140A MOS, but to me it did not feel as though I was really part of my MOS. I lacked the field experience older warrant officers possessed, and I had not put in the long hours they accumulated to ensure their units were mission ready. No Soldiers had called me in the middle of the night to complain their equipment was broken down. No commanders had confided in me on the eve of an upcoming operation that they were relying on me to make sure the data-link feeds functioned properly. I did not feel like I belonged, at least not just yet.

We all took a month of leave before we reported to our new duty stations. I was the only member of my class to receive an overseas assignment, the 69th ADA Brigade in Germany. My classmates, on the other hand, went to Fort Bragg, North Carolina; Fort Campbell, Kentucky; Fort Drum, New York; and Fort Hood, Texas. Most would be deploying to Iraq once they were done in-processing at their new duty stations. Some were told not to bother with housing because "they were leaving on the next flight out." They spent their leaves relocating their families to their new duty stations and telling them goodbye.

During my leave, I got married. My husband, Warrant Officer Stephen Ritter, is a 140E ADA WOBC student at Fort Bliss. He will be assigned to 5-7 ADA, 69th ADA Brigade, after graduation.

I dreaded boarding the plane for Germany, and not just because I was a newlywed who would be leaving her husband behind. I feared the possibility of failure at my new duty station. My first permanent change of station as a warrant officer was definitely a weird experience. As a warrant officer, you are expected to be the best of the best; you are the technical expert—the "Chief." What happens, though, if you cannot come up with the right solution to a technical problem in a high-pressure situation? Suddenly you are no longer exalted as the technical expert. Suddenly you become someone who has tainted the image of the entire Warrant Officer Corps. That is a heavy load for one Soldier to carry, especially a Soldier coming straight out of training.

The 69th ADA Brigade, V Corps, is headquartered at Giebelstadt, Germany, with a Patriot battalion (5-7 ADA) and maintenance unit (19th Maintenance Company) headquartered at Hanau, Germany. The Patriot battalion has two batteries at Hanau and two at Babenhausen, Germany. (The brigade's 6-52 ADA, a second Patriot battalion, was preparing to return to the United States when I arrived and has since unfurled its colors at Fort Sill, Oklahoma.)

The 69th ADA Brigade commander, Colonel Mark McConkey, and I sat down the day after my arrival. He described the brigade's current operational status and gave me a chance to address any concerns I might have. I asked what he expected of me as the brigade's command, control, communications, computers and intelligence systems integrator. He said that he knew I had come directly from WOBC and would need time to develop the tools I would need to accomplish the task. He told me that I would be fine and urged me to just keep working to fully develop my skills and expertise. Hearing this from a colonel was reassuring and put me more at ease. But I knew that my predecessor, Chief Warrant Officer Three Richard Velez, had left big shoes to fill. I was a warrant officer one filling a warrant officer three slot, but this is what happens in my MOS because we are so short of ADA warrant officers. Like the saying goes, "you do the best with what you have and always remember that failure is not an option."

I had an opportunity to test my ability shortly after reporting for duty. The brigade sent Captain Rosanna Clemente (officer in charge), Sergeant First Class Dennis Shay (noncommissioned officer in charge), Specialist John Goodwin (14J operator), and me to Hanau to support 5-7 ADA. The battalion was preparing for a Patriot battery command post and information coordination central exercise in conjunction with the upcoming Joint Project Optic Windmill IX Exercise in Crete, Greece. We set up a Link 16 network that reached all the way from brigade to

Warrant Officer Heather Anne Ritter poses with her Warrant Officer Basic Course classmates at the U.S. Army Air Defense Artillery School, Fort Bliss, Texas.

battery level. It was the first time ever that Germany-based battery command posts actually displayed air tracks on their Air and Missile Defense Workstations.

We were successful at our mission, but we had some minor system problems along the way. When my operator or noncommissioned officer in charge didn't know how to fix the problem, I had a solution. When I didn't know, they had the answer. I learned then and there that warrant officers do not always have all of the answers, but the more they learn from the people around them, the better warrant officers they become. I had some support from Chief Warrant Officer Three Patrick Plummer along the way via cellular phone. We both laughed after long days spent on the phone, and he told me that I was officially "inducted" into the MOS and the Warrant Officer Corps.

Several months of being on my own has taught me a lot. A primary lesson learned is that it is all about resources. Technical manuals, contractors, Soldiers, and experience are among the most important resources a warrant officer has to draw on.

Luckily for me, I was blessed to have a top-notch civilian contractor representative (Ed Suprenant) and two dynamite fellow warrant officers (Chief Warrant Officer Three Stu Chaffey and Chief Warrant Officer Three Ryan Zaborowsky) at 5-7 ADA to help me better support the battalion and its batteries. Even though Chief Chaffey and Chief Zaborowsky are Patriot 140E warrants, they had been performing 140A duties at the battalion level because there was no 104A warrant officer until I arrived. Honestly, they have been a gift, helping me accomplish the mission every time.

As I put the finishing touches on this article, I am deployed to Crete in support of the Joint Project Optic Windmilll IX exercise. I work in the Joint Interface Control Officer Cell as a 69th ADA Brigade watch officer. I also help train 14Js and troubleshoot equipment at all levels from battery to brigade. I am sustaining the knowledge and skills I have developed, and I am becoming vastly more educated along the way. Serving in the Joint Interface Control Officer Cell is teaching me how everything fits into the "joint" warfighter picture.

I love my job, and I love the exhausting days spent fixing equipment until I feel that I am on the virtual edge of collapse. It is definitely a challenge. I look back at the first time I thought about becoming a warrant officer, and I have no regrets. I am extremely grateful that the Army and my chain of command entrusted me to do the job of a technical expert in my field.

The most important things that I have learned from this entire adventure—the transformation from ADA enlisted Soldier to ADA warrant officer—is that if you want something bad enough you will go to the ends of the earth and beyond to achieve it. Never doubt your abilities and never let fear of failure stand between you and your dreams.

MOS 140E Air and Missile Defense Tactician/Technician

Supervises all maintenance of organizational equipment in an air and missile defense (AMD) unit. Advises the commander on employment capabilities and limitations of the AMD system. Monitors the AMD system and related support equipment to detect operator error and/or system malfunctions. Instructs Soldiers in AMD system operating tactics, techniques, and procedures; maintenance procedures; use and care of special tools and support equipment; and the Army Maintenance Management System. Operates the engagement control station at the battery level as a tactical control officer and operates the information coordination central at the battalion and brigade level as a tactical director. Identifies aircraft according to established procedures. Monitors engagement of threat aircraft and missiles. Evaluates the effectiveness of maintenance programs and operator training. Plans air and missile defense designs in support of assigned missions. Monitors and coordinates installation of modifications of the AMD system. Implements proper safety and security procedures applicable to the operation and maintenance support of the AMD system. Advises commander on all supply and maintenance considerations at all levels. Performs other official duties essential to the mission of the unit. Can serve in other nominative positions Army wide, with duties as instructors, career managers or staff positions in directorates.

Master Sergeant Garry Christman visits residents of the Home of the Sacred Heart in Gwangju. (Photos by First Lieutenant David Marlow)

2-1 ADA Moving to Camp Carroll

Move Leaves Gwangju Residents Divided Between Those Sad to See Patriot Soldiers Leave and Those Happy to See Them Go

Osan Air Base, Republic of Korea (ROK)—The 2nd Battalion, 1st Air Defense Artillery (ADA), 35th ADA Brigade, is moving from Gwangju Air Base and Gunsan to Camp Carroll. The move is expected to be completed by December 2006.

The Patriot battalion deployed from Fort Bliss, Texas, in October 2004. Its two-year stay at Gwangju Air Base was not without controversy. Civic groups staged frequent demonstrations to protest the stationing of the Patriot battalion at the site of the notorious "Gwangju Massacre," which occurred in 1980 when Republic of Korea troops opened fire to suppress a violent uprising.

2-1 ADA Soldiers countered the protestors with aggressive community outreach programs. The battalion's Soldiers taught conversational English classes in area schools and did volunteer work in local orphanages and rest homes. According to an article published in the 27 August 2006 issue of the *Pacific Stars & Stripes*, news that the Patriot Soldiers would be leaving Gwangju left the community sharply divided between residents who were sad to see them go and protestors who were glad to see them leave. However, in a statement prepared for *Air Defense Artillery* magazine, Colonel John G. Rossi, the 35th ADA Brigade commander, said that the decision to relocate the Patriot battalion was part of a long-standing plan to realign U.S. forces on the Korean peninsula rather than a reaction to the Gwangju demonstrations.

"The leaders, soldiers, and families of the 35th ADA Brigade are absolutely committed to our enduring alliance and partnership with our ROK counterparts, both military and civilian," said Colonel Rossi. "We are very excited about our upcoming 2-1 ADA move.

"The relocation from Gwangju and Gunsan to Camp Carroll near Daegu is part of the overall U.S. Forces Korea and Eighth Army realignment of forces on the Korean peninsula, and has been in the planning stages for quite some time," he continued. "The consolidation postures the battalion for optimal warfighting readiness while offering leaders and Soldiers all the benefits and efficiencies of residing in one of the larger U.S. Army hubs in Korea. Examples of these benefits include collocation with theater logistics and sustainment support, expanded maintenance facilities, onsite dental care, large post exchange and commissary, premier fitness center, recently renovated barracks, Department of Defense dependent schools, and the opportunity to obtain more command sponsored billets.

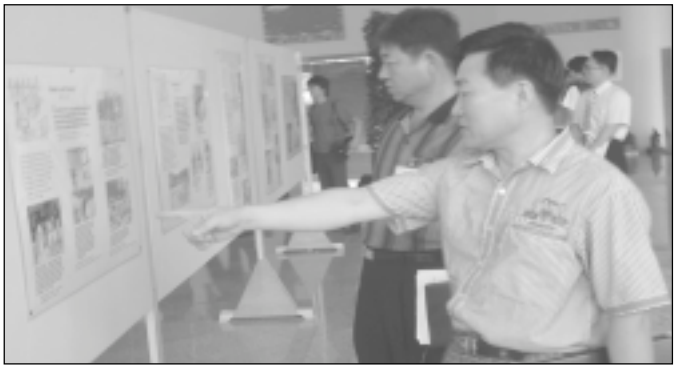
"Ultimately, conditions are being set for the battalion to have more of a sense of normalcy in its day-to-day operations, much like Soldiers and families would find at U.S. installations," Colonel Rossi added. "With this move, Soldiers will still be offered the unique opportunity to participate and contribute in a thriving and supportive local Korean community, much like we share today in Gwangju. We always respect the opinions and the rights of the handful of weekly demonstrators who peacefully coexisted with 2-1 ADA Soldiers, but their activities and positions were ultimately transparent as we developed this long-term stationing plan. The battalion and its Soldiers are truly grateful to our ROK Air Force and local Gwangju community hosts who have provided us outstanding support and friendship for the past two years.

"Special thanks and appreciation goes to Ambassador Park San-chul, who has been a great teammate all the way

A 2nd Battalion, 1st Air Defense Artillery, Soldier instructs a weekly conversational English class for South Korean students at a Gwangju high school. (Photo by First Lieutenant David Marlow)

back to his visit to Fort Bliss in 2004, when the 35th ADA Brigade was preparing to deploy to the Republic of Korea," Colonel Rossi concluded. "The wonderful interaction and support between 2-1 ADA, 1st ROK Air Force Fighter Wing, and the Gwangju community has been exemplary. We look forward to our continued partnership in the future."

Dr. George F. Drake accepts a copy of the Stars & Stripes *that announced the signing of the Korean War armistice in 1953 from Gwangju Mayor Park Kwang-tae. (Photo by Private First Class Dustin Roberts)*



Gwangju residents view a photo exhibition of U.S. Soldiers conducting humanitarian missions during the Korean War. (Photo by Private First Class Dustin Roberts)

SCANNING

Successful Terminal High-Altitude Area Defense Intercept Flight Achieved

Soldiers of the 6th Air Defense Artillery Brigade, Fort Bliss, Texas, participated in a successful test of the Terminal High-Altitude Area Defense (THAAD) system on 12 July 2006 at White Sands Missile Range, New Mexico.

This was a fully integrated flight test of all THAAD components, including the launcher, radar, fire control and communications, and interceptor. The primary test objective was to demonstrate interceptor seeker characterization of a ballistic missile target in the high-endoatmosphere (just inside the earth's atmosphere). A unitary (non-separating) Hera target missile was launched for the test, and although it was not a primary objective, a successful intercept of the target occurred. Other objectives included verifying integrated system operations in a high-endoatmospheric engagement and demonstrating the interceptor kill vehicle's response to in-flight communication and its ability to acquire and track an incoming ballistic missile target. The THAAD radar acquired and tracked the interceptor and target and provided in-flight target updates.

Two THAAD soldiers from the 6th Air Defense Artillery Brigade conducted radar operations while another two Soldiers assisted contractors at the launcher, and one Soldier assisted contractors at the THAAD fire control and communications station. Their interaction with the complete THAAD system proved a valuable test experience for the Soldiers, and provided insight into overall system performance.

While the previous two THAAD flight tests, also conducted at White Sands Missile Range, were focused on interceptor fly-out and performance, the remaining flight-test program is expected to provide verification of the integrated THAAD element at increasingly difficult levels.

Missile Defense System Goes Operational as North Korea Goes Ballistic

by Major Laura Kenney

U.S. Northern Command brought the 100th Missile Defense Brigade (Ground-Based Midcourse Defense) to operational level for the first time in response to the July 2006 North Korean missile crisis. Previously maintained in test mode, the brigade, headquartered at Colorado Springs, Colorado, and its 49th Missile Defense Battalion (Ground-Based Missile Defense) at Fort Greely, Alaska, remained at high alert status for the duration of the crisis.

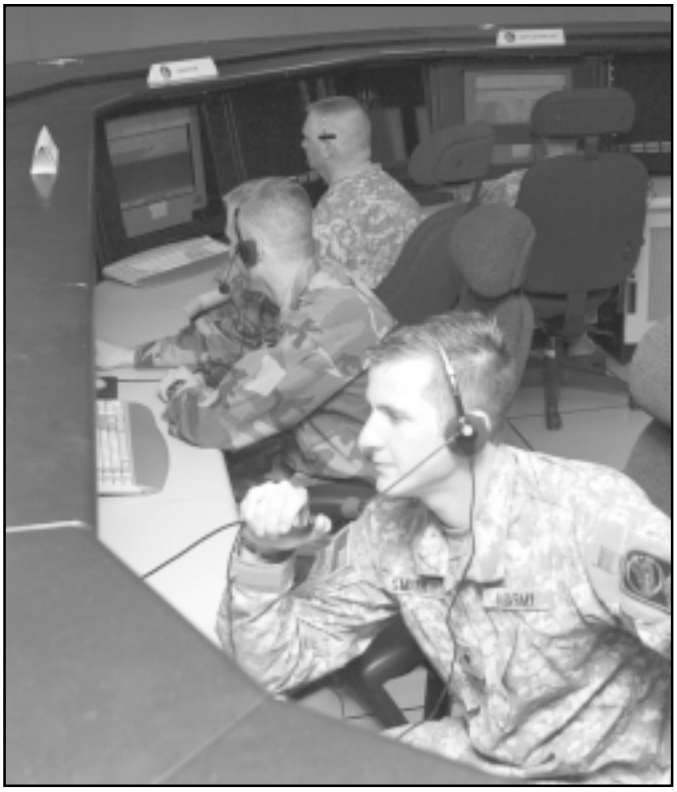
The missile crisis began in June 2006 when North Korea moved short-range ballistic missiles and a long-range Taepodong-2 missile, thought to be capable of reaching the U.S. west coast, to their launch pads. North Korea launched six ballistic missiles on 4 July 2006 and a seventh missile the following morning. It was determined quickly that none posed a threat to the United States or its territories. All landed in the Sea of Japan. North Korea's long-range Taepodong-2 failed in the early stages of its launch.

Members of the brigade and its battalion rose to the heightened mission requirements with great enthusiasm. Although vacations and military schooling had to be canceled, no complaints or grumbling were heard. The mood throughout the crisis was of taut readiness and a willingness to do whatever was required. This was the mission they had been training for years to execute.

"As we saw this play out over a span of weeks, every single Soldier wanted to be on the crew that would respond in defense of the nation. We weren't called upon to do so, but we were ready," said Colonel Michael Yowell, the brigade commander.

"We had excellent situational awareness," said the brigade's intelligence officer, Major Porter Grant. "From the initial preparations to the day the North Koreans fired, our Soldiers knew what they needed to know to perform their mission."

In Alaska, Echo Crew was on duty at the 49th Missile Defense Battalion fire direction center the day of the launches. First Lieutenant Scott Slaughter, an Echo Crew battle analyst, said, "We've always understood how important our mission was; that the primary reason for our existence as a unit is in defense of our nation. That day, if possible, we understood it even more clearly. As a student of history, I can say that both we and the North Koreans will learn a lot from what happened. Before and during the incident, I had complete confidence in the system and our training. After the actual launches, we continued scanning the horizon because you can never let your guard down."



Students from the 49th Missile Defense Battalion (Ground-Based Midcourse Defense) man the consoles while attending the eight-week Ground-Based Operator Course. From front to back are Specialist Russell Smith, Staff Sergeant Jason DeLange, and Captain Mark Kiraly.

Captain Chad Haman, a certified battle analyst, was on duty at Fort Greely as the Fire Direction Center director on 4 July 2006. "The real world intelligence made all the difference in the world," he said. "In the five years I've been with the system, there was never any doubt that we would be ready. After all the building, practicing, and rehearsing, and then the additional buildup to this particular event, we were ready for anything. Afterward, we were able to capture excellent lessons learned," said Captain Haman.

Lieutenant Colonel Ted Hildreth, who took command of the 49th Missile Defense Battalion on 8 May 2006, said that on the big day there were no surprises. "There was an integrated sight picture of the potential threat posed [which was passed] between Cheyenne Mountain, the brigade, and the battalion. Our crews drilled and rehearsed any number of potential threat scenarios to practice and refine provided firing doctrine, to include defined tactics, techniques, and procedures. I was there in the node the day they launched, and our response was exactly the same as we had been trained for. This one just happened to be real."

In Colorado Springs, Major Ron Hoard and his crew reported to duty at the 100th Missile Defense Brigade's Missile Defense Element shortly after the first two short-range missiles had been fired. The Missile Defense Element in Colorado Springs and fire direction center at Fort Greely mirror each other, with the former having a larger command and control role, and the latter taking the lead tactically, although they can act interchangeably.

Major Hoard said the prior launches had everyone in an immediate heightened state of awareness.

"Very shortly after we assumed duty, the Taepodong-2 was launched. It failed almost immediately, and we were informed pretty close to instantaneously of that failure. The crew reacted magnificently—exactly as we'd trained—going into crisis action mode without the slightest hesitation."

Although the Ground-Based Midcourse Defense System was not required to respond to any of the launches, it was available if needed to defend the United States and its allies. Trained and ready missile defense crews were at their stations on operational systems prepared to respond as necessary. U.S. Army North had the primary responsibility and was prepared to direct missile defense operations to protect the homeland, allies, friends, and other national interests from potentially hostile acts.

The 100th Missile Defense Brigade at Colorado Springs is composed of full-time Colorado Army National Guardsmen and a contingent of active Army Soldiers. The 49th Missile Defense Battalion in Alaska is manned exclusively by active Alaska Army National Guardsmen.

Major Laura Kenney is the 100th Missile Defense Brigade (Ground-Based Midcourse Defense) Public Affairs Officer.

"Missile Defense System Goes Operational as North Korea Goes Ballistic" is reprinted with permission of *The Eagle*, U.S. Space and Missile Defense Command, Colorado Springs, Colorado.

Missile Defense More Capable, Relevant

by Sergeant Sara Wood, U.S. Army
American Forces Press Service

America's missile defense capabilities grow increasingly more important as more countries demonstrate the ability and willingness to develop ballistic missiles and nuclear weapons, Defense Secretary Donald H. Rumsfeld said on 27 August 2006, after touring the Ground-Based Midcourse Defense missile assembly and storage facilities at Fort Greely, Alaska.

"It's an activity that has been evolving over time and is important for the protection of the American people," Secretary Rumsfeld told reporters after being briefed about the interceptor missile activities here. "It is an activity that with each passing month has become more capable."

The Ground-Based Missile Defense system is still limited and needs more testing, but it is important to have when North Korea and Iran are demonstrating their desire and capability to have nuclear programs and terrorist groups are using rockets to attack civilians, Secretary Rumsfeld said. He said he has been involved in the missile defense program from the start and has seen it go through much debate and change before arriving at its current state.

"I've seen the thing calm down to the point where it's now national policy, in law, that the United States develops a capability to defend itself against limited types of threats," he said.

Defense Secretary Donald H. Rumsfeld, left, talks with Russian Defense Minister Sergei Ivanov after a news conference in Fairbanks, Alaska, 27 August 2006. During his visit to Alaska, Secretary Rumsfeld visited the 100th Missile Defense Battalion at Fort Greely. (DoD photo by Staff Sergeant D. Myles Cullen)

After touring the missile facilities, Secretary Rumsfeld met with Russian Defense Minister Sergei Ivanov in Fairbanks, Alaska. The two discussed the U.S. missile defense system and how it affects Russia, as well as regional and security issues. At a news conference following the meeting, Minister Ivanov noted that the U.S.-Russia relationship is important to global security.

"Irrespective of the issues that we discussed, we always hope that there will be transparency and predictability, as well as the mutual respect of our governments' interests," Minister Ivanov said through a translator.

After the meeting, Secretary Rumsfeld and Minister Ivanov attended a dedication ceremony for a memorial to U.S.-Soviet military cooperation during World War II.

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FIRST TO FIRE

Soldiers of the 6th Air Defense Artillery Brigade prepare a Terminal High-Altitude Area Defense system for flight tests at White Sands Missile Range, New Mexico.

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